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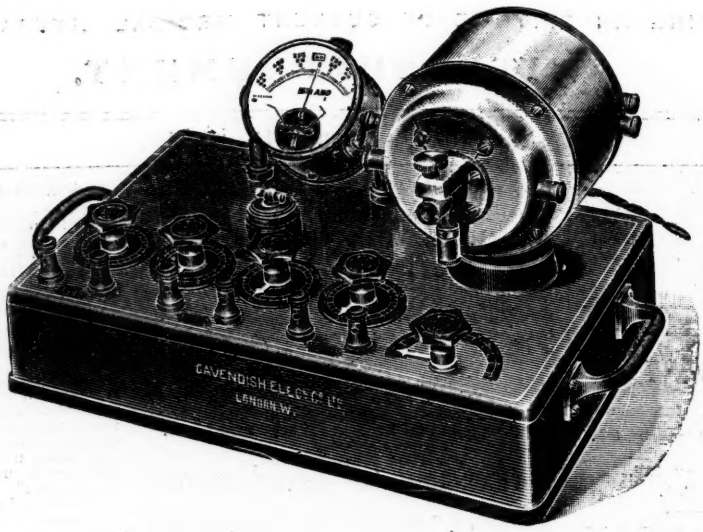

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TREATMENT BY RADIATION.

BY
ROBERT KNOX, M.D.Edin.,
Honorary Radiologist, King's College Hospital; Director of Electrical and Radio-Therapeutic Department, Cancer Hospital.

THE final word on the value of the treatment of uterine fibroids by *x* rays will rest largely with the gynaecologist, but the radiologist who pays attention to the clinical aspect of the cases and remains in touch with the patient will also attain a proficiency in the estimation of particular values. But the medical man in direct charge of the patient is frequently as competent to judge as either the radiologist or the gynaecologist, and he is indeed the best judge of the after-results of all treatment because of his more intimate association with the patient. The patient will always have a deciding vote on a matter which so intimately concerns herself. It behoves us therefore dispassionately to discuss the pros and cons before we pronounce a judgement the effects of which may be so far-reaching.

All cases of fibroid enlargement of the uterus where radiation treatment is proposed should be examined by a gynaecologist, who will report on the condition and express an opinion on the suitability of the case for this treatment. In this way a judicious selection of cases will be ensured, and the value of the method be accurately estimated. The converse also holds good; no case should be treated by radiations by anyone who is not an expert radiologist. The time is fast approaching when gynaecologists will adopt *x* ray treatment as a valuable adjunct, and it is imperative that they should take steps to become thoroughly familiar with the intricate subject of radiotherapy. Measures have been taken to meet the demand for thorough tuition in the subject, and it speaks volumes for the enterprise of Cambridge University that a special diploma has been established in radiology and electrology. Personally I have treated all cases in close touch with a gynaecologist, and it has also been my practice to send back to the gynaecologist all cases on completion of treatment for a final opinion; and also for further advice all cases which have failed to respond to *x* rays.

An illustration of the value of such collaboration is the case of a patient who was sent for *x*-ray treatment of menorrhagia which was supposed to be due to the presence of a fibroid. My request for an expert gynaecologist's opinion was refused by the patient, so I reluctantly undertook to give her a number of exposures. The result was not satisfactory, and, as I suspected from her symptoms that I was dealing with a mucous polypus, I insisted upon the expert opinion. The patient was examined, my opinion was confirmed, and surgical treatment relieved the condition.

On another occasion symptoms having arisen which called for an examination of the blood, the opinion of the clinical pathologist led to the services of a physician being called in.

A lady of middle age had suffered from exophthalmic goitre, and as a result of treatment at a health resort had improved, but had not quite recovered. Later she experienced severe floodings and consulted a gynaecologist, who treated her for some time; the haemorrhage, however, became more severe, and she was sent to me for *x*-ray treatment. The case was a complicated one to deal with, but under the circumstances I felt justified in treating her. The response to treatment was good at first, but in the middle period between the doses she began to show alarming symptoms. Before giving her a heavy dose which was expected to effect a cure of the menorrhagia I asked for a full blood count. The white cells were very low in number, so I determined to suspend *x*-ray treatment for a time and handed her over to a physician. A course of tonics combined with rest proved very successful—the blood count showed a marked improvement. The haemorrhage ceased for several months, and the general health improved greatly.

The lesson taught by this case is very important. In serious cases it is always well to check treatment by blood counts at regular intervals. Serious accidents will thus be avoided—and the radiologist will have a valuable guide for modification of technique. A drop in the total number of white cells is always an indication that treatment must be suspended or very cautiously continued. It will also be a guide for the actual dosage. Had I persisted in the case quoted and given the very large dose I had intended I have no doubt that I should soon have reduced the white cells to the danger point and would undoubtedly have seriously injured the patient.

History of Radiation Treatment of Fibroids.

Early in its history the extension of radiation treatment took in the diseases of the uterus, and attention was particularly directed to fibromyoma. The experimental work of Halberstädter in 1905 showed that atrophic changes in the ovaries of rabbits followed irradiation by *x* rays. Similar observations were made by Bergonié, Tribondeau, and Récamier. Reifferscheid described changes in the human ovary occurring after irradiation by *x* rays, observed in cases treated by *x* rays and subsequently operated upon. Many other observers have recorded changes produced in the ovary as a result of prolonged *x*-ray treatment. The majority of the results are presumably those produced by relatively small doses of *x* rays, and no details are given as to the penetrative quality of the ray or the filtration employed. Albers Schönberg, Haenish Bordier, and, later, Gauss and Lembcke, reported results obtained by the more intensive form of treatment; the latter worked out a very extensive technique, using filtered rays of moderate penetration, and improvement developing as the intensity of the dosage increased.

Later work in America and England on intensive lines has shown improvement in results altogether greater than was at one time thought possible. The advent of the Coolidge tube and apparatus capable of exciting it adequately have further improved the technique and put within our reach the possibility of administering fairly large doses at a considerable depth from the surface of the body. Further, the introduction of many ports of entry and the angling of the tube to focus the beam of rays upon a given part have rendered it possible to increase greatly the dose at a given spot. The ovary on either side is taken as the landmark upon which the rays should be focussed.

The Treatment of Fibromyoma of the Uterus and other Conditions of the Pelvic Organs.

With a modern installation the Coolidge tube offers advantages over any other. By using a high-tension transformer with the tube a uniform series of exposures can be readily and rapidly carried through. The heating current is adjusted to give the desired penetration, and the whole series of irradiations can be administered under precisely the same conditions. The dose should be measured by the Sabouraud and Noiré pastille or by a photographic paper, or by any method known to be reliable.

A filter of at least 3 mm. of aluminium is used, and it should be placed, if possible, midway between the tube and the patient's skin. The secondary filter, consisting of chamois leather, several layers of thick paper, and loofah sponge, enclosed in a linen bag for convenience, is placed upon the skin under the tube box. The time taken to produce the tint B varies with each installation and the current it is capable of passing through the tube. An average of about five minutes to each dose can easily be obtained, using 2 to 3 milliampères in the coil circuit. If the current is increased the time will be shortened proportionately to the amount of the increase in the intensity. A hard ray is necessary; between 8 and 9 on the Bauer qualimeter is a useful radiation to employ in these pelvic conditions.

The anterior abdominal wall is marked out into areas, the landmarks used being the level of the umbilicus and the pubic arch. As many as twenty ports of entry can be

utilized in this way. In addition, the areas may be extended into the lateral wall of the abdomen and the posterior aspect. These extra areas are useful when it is necessary to get in a very large dose quickly in acute cases. Each area receives the same dose of radiations. This dose must be adjusted in each case to the requirements of the particular tissues; for example, one administration of a large dose from an *x*-ray tube or from radium suitably applied may be extremely satisfactory in one case, while in another it may be necessary to repeat the dose on several occasions. The same result could be obtained by one very large series of doses from an *x*-ray tube. In practice it is well to proceed cautiously. The first dose is such as to afford a knowledge of the reaction of the tissues to the rays, and subsequent doses, both in regard to quantity, quality and frequency of application, may be adjusted according to it. Some cases which respond actively and in which the symptoms have for a time been aggravated, in the end give fairly permanent results.

Mode of Action of the Radiation.

The action of the rays appears to be exerted primarily on the ovary and its blood supply, suppression of function leading to atrophy of the structure and cessation of the menstrual haemorrhage. The latter is the most troublesome symptom arising from fibromyoma, and the improvement in the patient's health may in fact be attributed to its cessation. The atrophy of the ovaries is, however, accompanied in a number of cases by a diminution in the size of the tumour. It is reasonable to assume that an action is exercised on the tumour itself. It is therefore advisable, when treating the ovarian areas, also to include the tumour. The tube is arranged in treating each area so that the beam of rays may be focussed upon a given spot. If each ovary gets the maximum effect from each of those ports of entry on the side in which it lies, the tumour also receives a very large proportion of the radiations passing through it, and changes occur in its structure.

Whatever the action may be and upon whichever structure the rays act most, there is no doubt whatever that in the treatment of those conditions many marked beneficial results can be obtained by carefully applied courses of radiations.

Dosage.

It is advisable when possible to begin the treatment just after the cessation of the menstrual period. The whole of the areas may be treated at one sitting if necessary, but it is better to divide the dose, giving a portion on two or three successive days. This diminishes the exhausting effect of continuous treatment for one or two hours or more, and lessens the after-effects. The aim of treatment is to produce the result gradually. It is quite possible to produce a result in one or at the most two sittings, but the effect on the patient is often very injurious for a time, as serious reaction may be induced. In the average case a satisfactory result may be looked for in from three to six sittings, each consisting of treatment to ten to twelve areas. It is not at all uncommon for the period after the first sitting to be more excessive than those before the treatment, and so it is necessary to caution the patient on this point. Improvement is gradual, beginning as a rule after the second series of treatment. The menstruation or haemorrhage generally ceases after the third series, and may not be seen again. It is, however, advisable to administer one or two further series in order to keep up the action.

The dose administered can only be estimated by its effects upon the individual. The surface dose can readily be estimated, and that at a depth of 2 or 3 inches can be calculated from the initial skin dose. The radiations are absorbed by the intervening tissues in a ratio which is regular in air, but not in the living subject, as the tissues interpose a varying resistance according to their density. The biological reaction in individuals is by no means constant, tumours also vary in their power of resistance; hence the difficulty in estimating the dosage. The answer to the question whether heavy dosage at regular intervals should be employed, so far as that is possible, or small doses at regular short intervals—say once a week—is that both may be required in particular cases. Patients who have resisted the larger doses at long intervals have responded readily to the small doses at shorter periods, and vice versa. There are factors controlling the results of which our knowledge is as yet very imperfect.

Contraindications to Treatment by X Rays (or Radium).

There are certain conditions which if coexistent are direct contraindications to radiation treatment:

1. It is obvious that if a large portion of the fibroid has become converted into calcareous matter, and if the tumour is of large size, *x* rays can have no beneficial effect. In doubtful cases a radiographic examination will reveal the extent of the degenerative change.
2. Most forms of degeneration should be excluded before *x* rays are administered, though, if not very extensive, the treatment may be tried.
3. Malignant disease of the uterus calls for very careful consideration. Operative measures should be discussed. If it is impossible to remove the tumour, then there is no objection to a combined attack on the disease by *x* rays and radium. Very careful application of radium tubes is necessary, and for this a general anaesthetic is indicated.
4. Infective conditions of the uterus complicating fibroids.
5. Suppurative salpingitis or pelvic peritonitis.
6. Inflammatory conditions of other organs in the vicinity—namely, appendicitis, cystitis, etc.—should be dealt with before attempting to treat the fibroid.
7. Submucous pedunculated fibroids.

Advantages and Disadvantages of X-ray Treatment.

The advantages are:—

(1) The treatment is quite painless, and any ill effects are quite temporary.

(2) The patient can live her ordinary life, merely arranging for one or two days of rest after each treatment.

(3) No elaborate preparations are required.

(4) The resulting menopause is not usually attended by such severe nervous disturbances as those following operation.

(5) In patients whose general health is much impaired the recovery is very rapid when the haemorrhage has been arrested; moreover, the shock so often inseparable from hysterectomy is entirely obviated.

The disadvantages are:—

(1) It takes a considerable time to effect a result—treatments may have to be given at intervals for some months.

(2) The treatment is not invariably successful.

(3) The tumour, though as a rule much reduced in size, does not entirely disappear.

(4) Treatment may cause unfavourable changes in the blood.

Immediate and Later Effects.

There are certain conditions produced by the treatment of which the practitioner should be cognizant if he is to be in a position to advise his patients. Of these the most important is the so-called reaction induced by the radiation.

Of the *immediate effects* nausea is most common. This is probably due to the inhalation of highly ionized air, which is invariably found in the vicinity of high-tension electrical machinery, and possibly to the generation of ozone in the vicinity of the active *x*-ray tube. Headache is often met with, and is attributable to the same causes. Giddiness is a common symptom, and may be directly traced to change of posture, most patients suffering temporarily and briefly from this when they arise from the *x*-ray couch. Patients frequently go to sleep while being treated, owing, possibly, to the monotonous hum of the active electrical apparatus. For faintness a small dose of sal-volatile will suffice. Eau de Cologne sprinkled on a towel and laid over the patient's face will serve to minimize the effects of the ozone and ionized air. An electrical fan in the near vicinity of the tube will promote free circulation and carry off some of the ionized air. In prolonged treatments a little oxygen in an inhaler will revive the patient.

The *later effects* come on several days after the treatment, and their appearance has a direct relation to the intensity of the dose. In large doses it comes on earlier, possibly the next day, but on the average not for two or three days. If the dosage has been very heavy, intense prostration may follow, with rapid pulse, headache, and feelings of malaise. The temperature has been known to rise and remain above normal for some time, and patients

may feel really ill. The treatment consists of rest in bed and careful attention to diet, with such drug treatment as the symptoms indicate.

The patient generally recovers after a few days, and the next series of treatment, which is due as a rule in about a month, need not be postponed. Generally a degree of tolerance to the treatment develops and the patient shows hardly any reaction to subsequent doses, but a small number never acquire this tolerance and dread the repetition of the treatment on account of the distressing symptoms it produces. In these cases it is probable that the dosage has been too great for the patient's general resistance. The after-effects may in these cases be minimized by giving the treatment at longer intervals, or giving smaller doses and carrying the total amount over a longer period.

Dangers of X-Ray Treatment.

Indiscriminate treatment by *x* rays is very dangerous. The skin may be seriously damaged and severe burns induced. In one case—that of a patient who was treated for a supposed malignant growth of the pancreas for over a year—there was when I saw her a large, fairly deep *x*-ray ulcer, and around it a large area of inflammatory reaction. I watched the ulcer for over a year and only used palliative applications. In about eighteen months it healed. An accident such as this is avoidable and should never occur in cases where the technique is intelligently carried on.

Type of Case likely to Benefit from X-Ray Treatment.

Although it may be assumed that tissue changes may be induced in practically any form of pelvic disease, and that in a number of them the action will be beneficial, yet for practical guidance it is necessary to survey carefully the field of usefulness and indicate where radiation treatment is likely to give better results than other methods such as the operative, where it is likely to help towards a cure when combined with the operative and other forms of treatment, and particularly to indicate when it is wise to hold one's hand and decide against *x*-ray treatment.

While it has been admitted that up to the present the interstitial fibroid is the most suitable for radiation treatment, several writers have pointed out that practically all forms of fibroid respond favourably. The small tumour is more likely to become amenable to treatment than the very large tumour which fills the pelvis and the greater part of the abdomen. It is also worthy of note that the majority of the patients submitted to *x*-ray treatment have been for one reason or another unsuitable for operation. Hence the results secured in a number of cases have been obtained in patients who were too bad for operation, and therefore presumably not favourable subjects for any form of treatment from the curative point of view.

Sir John Phillips in a valuable paper states that he has used *x* rays in nearly all forms of fibroid with beneficial results. Any case of fibroid tumour will be benefited by radiation treatment if the symptoms are not urgent enough to call for immediate operation. The need for operation may be determined by (1) the amount and frequency of the haemorrhage and the secondary effects upon the patient; (2) the size of the tumour and rate of growth; (3) the pressure effects upon other structures. Even in this class of case radio-therapy may achieve results if the patient is willing to risk the effect of very intensive treatment and any other danger incident to its use.

There are other factors, such as the age of the patient, which may be taken as a guide to the practitioner in these cases. Till recently it has been said that patients under 40 years should not be treated by *x* rays or radium. More recently it has been found that at any age the patient may be beneficially influenced, and that if modified results are all that are required it is possible to produce them. Instances of this kind will be met with in severe dysmenorrhoea associated with an infantile type of uterus. Such patients should be warned of the probable complete cessation of menstruation if the treatment is pushed to its limit. There are other conditions than fibroids, such as menorrhagia from any cause and endometritis, which may be influenced by treatment. The following notes on two cases are illuminating:

Case 1.—A patient who suffered from a large fibroid with profuse and almost continuous haemorrhage, was in the first instance considered by the gynaecologist a suitable case for operation. She refused, and continued to suffer seriously from the effects of the haemorrhage. When almost *in extremis* she at last consented to submit to operation. Her condition was now so serious that the surgeon did not feel justified in taking the risk. The patient was kept in bed and slowly got worse. As a very last resource she was taken in an ambulance to a colleague, who did the best he could by giving her a thorough course of irradiation. The response was very satisfactory. After a few weeks she began to improve, and ultimately made an excellent recovery. A case of this type would be best treated in a hospital or home where the apparatus could be brought to the bedside; or radium in fairly large quantities would be very helpful.

Case 2.—A lady, aged about 45, suffered from a very large fibroid, which was situated on the left side of the pelvis, and extended an inch or two above the level of the umbilicus. Haemorrhage was very profuse, amounting to severe flooding at each period, and the frequency was increased. A course of *x*-ray treatment extending over four months led to a complete cessation of the haemorrhage. The tumour diminished considerably in size, but when last seen, about a year ago, it was still palpable. Recently a communication was received from the patient to the effect that she was suffering from nervous symptoms. A physician who examined her reported that she was suffering from symptoms probably associated with the menopause artificially produced by the *x* rays, but that she would, no doubt, respond to medicinal treatment. The case was treated early in 1915, close on five years ago.

In discussing the treatment of fibroid by *x* rays the claims of radium as an alternative must be considered. The difference between the two is one of wave length, and it is possible that the gamma radiation from radium may produce as good or better therapeutic results. Radium has, therefore, strong claims which cannot be ignored. The advantages radium possesses over *x* rays are too obvious to require any discussion. The patient can be treated at home or in a hospital, the radium being brought to the bedside. The dosage can be more accurately estimated, since the output of radiation from a tube containing radium is constant. I consider that the two in combination are very useful—particularly when a rapid result is desirable.

ADVANTAGES AND DISADVANTAGES OF X-RAY TREATMENT.

BY

HERBERT WILLIAMSON, M.A., M.B., F.R.C.P.,

Physician Accoucheur, St. Bartholomew's Hospital; Consulting Gynaecologist, Royal Waterloo Hospital for Children and Women.

I THINK that this combined meeting of gynaecologists and radiologists will prove helpful to both. It is important that the gynaecologist should have some knowledge of the difficulties of technique and of the problems which confront the radiologist; it is equally important that the radiologist should be familiar with the clinical aspects of the cases he treats, with the natural history of fibromyomata, with the changes which they undergo, and with the pathological conditions of the ovaries and tubes which often accompany them.

In entering upon this discussion we must consider, in the first place, the present position of the operation of hysterectomy for fibroids. I say, without hesitation, that it is one of the most satisfactory operations in the whole range of surgery; its mortality is low, and it may be safely undertaken even in intensely anaemic women after transfusion of blood from a suitable donor. The tumour is removed and ceases to be a source of danger. The doctrine that a fibroid is harmless after the menopause, whether occurring naturally or produced by *x* rays, is fallacious; we frequently find it necessary to remove fibroids years after the menopause for a variety of reasons, by no means the least important being the development of malignant disease. The operation does not deprive the patient of her ovaries, and this is an important consideration even in women who are within a few years of the time of the menopause.

We must remember, in the second place, that all fibromyomata are not suitable for *x*-ray treatment, and for my own part I recognize ten groups of cases in which the treatment should not be advised:

1. Where the patient is under 40 years of age.
2. Where the tumour can be removed by enucleation by either the abdominal or the vaginal route.
3. Where the fibroid shows evidence of degenerative changes.
4. Where the tumour is very large.
5. Where there is evidence of old or recent inflammatory lesions in the ovaries and tubes.
6. Where there is any suspicion of malignancy.
7. Where there are severe pressure symptoms upon the

bladder, the rectum, or the great nerve trunks or veins of the pelvis.

8. Where the fibroid is complicated by the presence of an ovarian cyst.

9. Where the fibroid is complicated by pregnancy.

10. Where the patient is gravely anaemic with a red blood cell count of less than two and a half million, and the haemoglobin is less than 35 per cent.

I have seen a number of instances in which *x*-ray treatment has proved disastrous because these limits have not been observed, and in my opinion it is not justifiable to treat uterine fibromyomata by *x* rays until a thorough investigation of the condition of the pelvic organs has been made by one skilled in such examinations. The treatment is undoubtedly of great value, and it will be unfortunate if it is brought into disrepute by its application in unsuitable cases.

What are the Disadvantages and Dangers of the Treatment?

I shall limit my remarks to those which I have seen myself. Whilst I do not deny that the rays may produce primary effects upon the tissues of the tumour itself I am convinced that their main action is through the destruction of the follicles and interstitial cells of the ovary. I have seen on several occasions distressing and prolonged vasomotor phenomena follow the treatment in women under 40, producing symptoms which were not relieved by administration of extracts of the endocrine glands. In three cases I have seen kraurosis vulvae develop, and cause such severe dyspareunia that marital relations had to be abandoned altogether.

I have three times operated upon patients at a considerable interval after *x*-ray treatment. I have found the pelvic tissues dense and fibrous, and very firm adhesions between the uterus and coils of intestine. In one of these cases I operated for intestinal obstruction, in one for carcinoma of the body of the uterus, and in the third for recurrent haemorrhage. It is, I think, well established that this condition of the tissues is not infrequently found after the application of *x* rays, and adds greatly to the difficulty and danger of any pelvic operation which may subsequently have to be undertaken. In two cases I have seen a dormant infection of the Fallopian tubes lighted up into fresh activity, and in one of these cases general peritonitis developed. I have twice operated for acute red degeneration developing during *x*-ray treatment, and on two occasions I have seen severe burns of the abdominal wall. I have twice operated for haemorrhage so severe and intractable that the treatment had to be abandoned.

This is a formidable list, and the study of these cases has led me to adopt the contraindications I have just given.

I believe that the treatment should be limited to women over 40 years of age with a small or moderate sized tumour, with no evidence of degeneration, with no inflammatory lesion of the uterine appendages, where the patient is not intensely anaemic, and where there are no symptoms of malignancy. My colleague, Dr. Finzi, has treated for me a number of cases selected on these lines with most happy results, and we have several under treatment at the present time. Radium has given equally good results, and possesses an additional advantage in that the desired result is produced more quickly.

X rays are also of value in the treatment of that condition of the uterus known to gynaecologists by the name of "chronic metritis." These cases are distinguished clinically by a delayed and protracted menopause accompanied by profuse and prolonged haemorrhages. The uterus is enlarged generally, the walls are thickened, and there is frequently an associated overgrowth of the endometrium. The majority of these cases are the result of subinvolution, and on microscopical examination masses of elastic tissue, the remains of the hypertrophied internal elastic lamina of the arteries of former pregnancies, are found in the uterine wall. Before submitting these patients to *x* rays the uterus should be curetted, and the curettings examined microscopically to exclude carcinoma of the body. In this group of cases *x* rays bring about a permanent cure, and the patient is spared an abdominal operation.

In conclusion, I would appeal to radiologists to adopt a uniform standard of measurement in dosage, and when publishing results to state fully the method of application, the nature and thickness of the screen used, and the doses administered.

The treatment cannot be placed upon a scientific basis until this is done, and we need further knowledge on these very important questions.

THE TREATMENT OF THIRTY-SEVEN CASES OF UTERINE FIBROMYOMATA BY INTENSIVE *X*-RAY THERAPY.

BY

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IN analysing a series of 118 of my own cases of fibroids of the uterus, from January 1st, 1914, until the present date, I find that I left 25 cases untreated. Of the remaining 93 cases I employed:

(*a*) Intensive *x*-ray therapy in 37 cases.
(*b*) Operative treatment: hysterectomy, 47 cases; myomectomy, 4 cases.
(*c*) Intensive *x*-ray therapy, followed by hysterectomy, in 5 cases.

That is to say, I have employed *x* ray treatment in 39.7 per cent. of my cases in which there were symptoms necessitating treatment.

Of the 37 *x*-ray cases 21 were sent to me by other gynaecologists. The remaining 16 were cases that originally came to me for treatment, and in which I definitely chose *x*-ray instead of operative treatment.

I have tried as much as possible to let the physical signs and symptoms be the determining factor in the choice between operative or *x*-ray treatment. That is to say, in cases in which the size of the tumour did not exceed that of a six months pregnancy, where the fibroid was interstitial and menorrhagia the prominent symptom, I chose *x*-ray treatment for my patient. In cases, on the other hand, in which the fibroids were definitely pedunculated, or in cases in which I have suspected submucous fibroids, or where the tumour exceeded the size of a six months pregnancy, I have done a hysterectomy. Again, if the patient was suffering from a serious form of heart disease and profound anaemia the result of profuse menorrhagia, I have definitely chosen *x*-ray therapy, even if the uterus exceeded the size of a six months pregnancy.

To a certain extent I have been influenced by the profession of the patient. In a large proportion of my cases the patients were headmistresses who preferred to choose a treatment which did not interfere with their regular work, and one in which the menopause produced was freer from symptoms than the normal climacteric. And, lastly, expense is bound to influence both surgeon and patient. Intensive *x*-ray therapy is expensive for the very poor, who are content with hospital accommodation for their hysterectomies. Until the general hospitals provide cheap *x*-ray treatment these will naturally be forced to choose operation. In all cases, however, in my series in which the fibroid was small and causing no symptoms I have left them untreated.

Analysis of the 37 Cases treated by Intensive X-ray Therapy.

Age.—The youngest patient was 35, and the eldest 58. The average age was 47.

Occupation:	
Married (16 having had children)	23
Unmarried	14
Headmistresses or matrons	10
Author	1
Government official	1
In business	4
Symptoms—(*a*) Due to tumour:	
Profuse menorrhagia	33
Profuse metrorrhagia	9
Disturbances in micturition	4
(*b*) Due to general condition:	
Serious heart disease	2
Size of Tumour:	
Larger than a six months pregnancy	1
As large as, or smaller than, a six months pregnancy	36
Kinds of Fibroid:	
Subperitoneal and interstitial	14
Interstitial	19
Number of X-ray Treatments:	
Average number given	7
Number given before amenorrhoea was obtained (average)	4

Diminution in the size of the tumour comes on gradually, and continues long after the cessation of treatment. In 4 cases a fresh series of *x*-ray treatments had to be given after an interval of some months.

Hysterectomy following X-ray Treatment.

In five of my cases hysterectomy was performed after *x*-ray treatment, either by some other surgeon or myself.

In one case appendicitis developed, and when I performed an interval appendicectomy, I did a hysterectomy, and took the opportunity to have sections cut.

In another case the pressure symptoms were so troublesome that I thought it better to lose no further time, and did a hysterectomy. The pathological findings included a recent corpus luteum, showing that the ovarian function had not been destroyed.

In another case symptoms of chronic intestinal obstruction developed one year after treatment had ceased. The surgeon who operated did a hysterectomy. The fibroid had undergone calcification. The patient died ten days after, and the necropsy showed malignant omentum, stomach and mesentery. The pathologist considered the malignant growth probably endothelial in origin, and apparently primary in omentum.

In a fourth case there was a mistake in diagnosis. Amenorrhoea was obtained after *x*-ray treatment, but one year after the patient consulted a surgeon, as the tumour had begun to grow rapidly, and in operating he found a large multilocular ovarian cyst.

In the fifth case the patient complained of metrorrhagia. I did a diagnostic curetting, and as there was no malignancy, and as I could not prevail upon the patient to let me do a hysterectomy, I gave her seven *x*-ray treatments. Amenorrhoea started after the fifth treatment, but as the pressure symptoms continued (incontinence of urine being the most troublesome) I at last prevailed upon the patient to let me do a subtotal hysterectomy. This I did, removing the left tube and ovary as well. The fibroid uterus weighed 5½ lb., and the bigger of the two subperitoneal tumours showed degeneration. The sections showed simple fibroid growth, no malignancy. She is now in excellent health.

Of the 37 cases there are two in which I have purposely not given more *x* rays than sufficient to check active menorrhagia.

One case in my series I consider unsatisfactory, and in this case I think there must be some condition other than fibrosis of uterus.

She is a very neurotic and anaemic woman of 42, who for years has complained of menorrhagia, dysmenorrhoea, and frequency and pain on micturition. In 1917 a London gynaecologist did a dilatation and curetting, but felt a hysterectomy was unjustifiable. The menorrhagia continued, the patient also suffering from dilatation of heart and attacks of tachycardia. Two specialists agreed that *x*-ray treatment should be tried, but after nine treatments the menorrhagia still continued, and the patient gave up treatment. I do not know her subsequent history, but she refused to undergo an operation, which I am sure is the only right course.

Effects of Treatment.

Immediate Effects.—In the majority of patients, beyond the fact that the treatment is rather long and monotonous, there are no unpleasant effects. In only five cases was there any "Röntgen-jammer," and that did not come on until the later treatments in three of the cases. In the remaining two it occurred after the first treatment. The patients tell me that they feel better and better in health as the weeks go on, but I suppose this is primarily due to the disappearance of the anaemia.

Later Results.—A short time ago I wrote to or saw all my patients, and, except in three cases I cannot trace, they all reiterate how well they feel and how improved their general health is, so much so that I have wondered whether any other factor besides the loss of anaemia was at work.

Dangers.—I feel myself, however, that as long as one's diagnosis necessarily remains faulty there is a danger in using intensive *x*-ray therapy for any but those cases in which we are fairly certain we are dealing with a straightforward uncomplicated case—for example, a fibroid uterus well under the size of a six months pregnancy, interstitial rather than subperitoneal, and in which the chief and only symptom is excessive menorrhagia. In such a case it seems to me to be the treatment *par excellence*. Also in cases of grave heart disease where no surgeon would like to operate, it seems to me to be the ideal treatment, and the improvement in general health of such patients is wonderful. In all cases that are at all doubtful in diagnosis I am certain that hysterectomy is the only right treatment.

Technique.

I use a 12 in. spark coil, large mercury gas interrupter, and a rhythmic interrupter (lately I have been able to dispense with this since I used a Coolidge tube). As long as I used the Müller rapid water-cooled tube I used Ernest Pohl's osmo-regenerator, which enabled my *x*-ray nurse to remain behind the screen during the whole of the exposure. I have used Kienboeck strips in all my cases.

Ports of Entry.—Cross-fire is employed, the abdomen being carefully mapped out into sixteen or eighteen square areas, and the area over the sacrum is divided into two or four.

Two L-shaped pieces of lead are placed on the abdomen in such a way as to expose the square area to be rayed. Then a Kienboeck strip is placed so that two-thirds of it lies directly over the skin of the patient and one-third over the lead. On the top of this is a small cube of aluminium 5 mm. thick (to simplify the accurate reading of the dose by the Kienboeck scale for over 10 X), so arranged that it covers half the part of the Kienboeck directly over the skin of the patient, and both the strip and the cube fit into a pocket in a linen bag containing sheets of stout photographic paper to absorb the secondary rays produced in the filter. Another linen bag containing loofah is placed on the top of this, and then the large sheet of Müller protective material which is of extra stout thickness, and out of the middle of which a round hole (diameter 4 in.) has been cut. The tube in the carefully lined lead and rubber box, with 3 mm. aluminium filter, is then adjusted over the round hole so that the distance between the anticathode and skin is about 18 cm.

A stop-watch is used for exposure; seven minutes with a good working tube (10 Welnelt) for each area, eight minutes if lower than six milliampères (for Müller rapid tube); three minutes with Coolidge, hardness eight, and 4 milliampères. It takes three to four hours to irradiate all the eighteen to twenty fields, or two to three hours with a Coolidge, but I do this on two consecutive days. The treatment is repeated after an interval of seventeen to twenty-one days, and irrespective of the monthly period. In my own series I found that the total dosage was an average of 2971 X for each patient.

In conclusion, it seems to me that *x* ray treatment may be looked upon as the treatment *de luxe* for all small uterine fibroid tumours associated with haemorrhage. It improves the health of the patient without interfering with her usual mode of life, and causes a great reduction in the size of the tumour. It does away with the nervous shock of an abdominal operation, and, as I said before, it brings about a climacteric involving less disturbance even than a natural one, and lastly, and most important of all, it is a treatment eminently successful in suitable cases, and is one free from any mortality.

RADIOLOGY IN GYNAECOLOGICAL PRACTICE.

BY

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THE uses of radio-therapy in gynaecology were to have formed a subject for discussion at the Royal Society of Medicine in 1914, but the war prevented the meeting being held. In August, 1914, I wrote an article for the *Journal of Obstetrics and Gynaecology* entitled, "The future of Radiology in Gynaecological Practice," in which I stated my conviction that "radio-therapy promises a great advance in the treatment of female ailments." This was six years ago, and I endured a certain amount of opprobrium at that time in consequence of my expression of faith in the utility of *x*-ray treatment. It was said to me, "We have seen Apostoli's electrical treatment come and go, and the rays will share the same fate." Such a statement could not be justified to-day, and the events of the past six years have proved that my faith was well founded. We have learned in relation to fibroids what can be done and what cannot be done by radio-therapy. Enough material has been collected to enable us to formulate rules as to indications and contraindications for the use of radio-therapy in the treatment of these tumours. In my monograph on this subject, which appeared in *Fibroids and Allied Tumours*, published in 1918, I summarized my conclusions thus:

1. Radio-therapy acts mainly by destroying the ovaries, but *x* rays also have a destructive influence on the cells of the myoma, as evidenced by the coincident shrinkage under the treatment, which, when it is achieved, is too rapid to be explained by inhibited ovarian activity alone.

2. Radium and mesothorium used alone are not so suitable as *x* rays for cases of myoma, as no shrinkage of the growth can be expected.

3. *X* rays combined with radium or with mesothorium appear to effect more rapid haemostasis than do *x* rays when used alone.

4. The French cross-fire combined with the intensive technique promises the best results; only by cross-fire can topographical difficulties be overcome.
5. The treatment is of no avail for submuccus growths.
6. Radio-therapy should only be employed in cases where the diagnosis of myoma is absolutely certain, and when the tumour is uncomplicated by adhesions, degeneration, and malignant new growth.
7. The gynaecologist must decide the indications for treatment and watch clinical developments.
8. Speaking of fibroids in general, the contraindications outweigh the indications for radio-therapy. As Gustav Klein said at Halle, "Myomectomy shall never be thrown into the lumber-room." When the pen has superseded the sword, the scalpel will still be needed for myoma.

I have shown coloured illustrations of the changes wrought in fibroids by *x* rays in the monograph *Fibroids and Allied Tumours*. They show what an extensive destruction of muscle fibres occurs, and in the case of the ovaries I find the rays are capable of destroying all the granulosa cells in the Graafian follicles, thereby preventing ovulation and, of course, drying up entirely the internal secretion.

Subsequent experience has caused me to modify my views as regards the use of radium for fibroids, for, encouraged by successes with cases of chronic metritis treated by radium, I have tried it for fibroids with very promising results. I am glad to find Dr. Knox is also in favour of employing the combined effects of radium and *x* rays, and that he employs multiple points at various angles, or what the French call "cross-fire," so as to overcome any topographical difficulties which may have been pointed out to him by the gynaecologist.

In one important matter I must join issue with Dr. Knox—namely, concerning the age of the patient. Like Gauss and Krinski, he would treat a fibroid patient regardless of what her age may be. In my opinion the technique is not sufficiently highly developed to justify the use of rays for a young subject. When radiologists can regulate the dosage so as to ensure obtaining a normal "period" in the subject of menorrhagia and stopping at that, then, and only then, in my opinion, is it safe to employ radio-therapy. This leads me to a point which has anxiously exercised my mind for years, and my trouble on this question, that of dosage, is not diminished by what Dr. Knox has to say on the subject. We gather that he favours the intensive school, and that he measures his dose by the Sabouraud-Noiré barium platino-cyanide pastilles. What we want to know is the number of tint B Sabouraud-Noiré units he employs to effect a certain purpose, both the number of units employed at one application, and also the sum total used in the requisite number of applications necessary to produce the sought-for result. Again, it is reported that the Sabouraud-Noiré pastille measurement is unreliable for applications which last longer than ten minutes; it would therefore be interesting to know why Dr. Knox prefers this method to that of others, such as the Holzknecht (alkaline salt) process, or the mercury solution method of Schwarz. The Kienboeck (photographic) plan, which was used by practically all the earlier workers to obtain the X unit, seems to have been discredited, although I note Dr. Knox does not exclude it. At the 1913 meeting in Halle all the results which were published were expressed in multiples of the X Kienboeck and H. (=2 K.) Holzknecht units, thus giving the reader a concrete idea of dosage, which, to my mind, is essential. The expressions "fairly large dose," "large dose," "very heavy dosage," convey the idea of a rule-of-thumb treatment savouring of empiricism. We do not employ such expressions as these in writing a prescription; we prescribe a given strength of a drug which we rely upon to produce a certain effect. Similarly, one would like to be in a position to say to a radiologist, "This is a case of a small uncomplicated fibroid, the ovaries are in the normal position; please give an average dose of 50–60 X or 25–30 H., or 25–30 S.N. at each application, and bring the whole dose up to 150 X." Or, again: "This is a case of a fibroid the size of a four months pregnancy; the tumour is torsioned, the left ovary is displaced forwards, the right ovary lies behind the growth. Please employ cross-fire from multiple points and use an average dose of 1,800 X and total dose 3,000 X."

Without a standard unit of measurement such close co-operation with our colleagues, the radiologists, is not possible, and we resort to the use of radium because with its measurement in milligram-hours we have a clear dosimetric conception of the activity of the rays we are employing. If this assurance were forthcoming in the use of *x* rays it might become safer to use them for younger subjects. At present I hesitate to employ *x* rays in a case where the conservation of ovarian activity is of prime importance, because I dread the risk of inducing what Dr. Knox has rightly termed "the resulting menopause, with its severe nervous disturbance." My feeling is that the *x* rays are not yet sufficiently well harnessed to make it sure that their employment will not completely spay a woman. This may be a secondary consideration at the end of the fertile period, but it is a disastrous mutilation in a subject of fewer years, and one which the surgeon when operating knows how to avoid and takes pains to do so.

In conclusion, let me say that Roentgen's discovery in 1896 has already done much for gynaecology, and I have sanguine hopes that from gynaecologists and radiologists working in union much more will be accomplished in the future.

DISCUSSION.

Mr. F. L. PROVIS said that he believed he was the only gynaecological surgeon in London who had himself undertaken the treatment of gynaecological cases by *x* rays. After eight years' experience he had come to the very definite conclusion that *x* rays was a therapeutic agent of the highest value in the treatment of properly selected cases. He did not think, however, that the use of the *x* rays should be advised in the case of young patients, certainly not to the length of producing amenorrhoea. Could the rays be administered in just sufficient doses to reduce the loss to normal proportions in excessive menstruation, or to cure dysmenorrhoea without stopping the monthly flow for certain, then the application of *x* rays to women under 38 years of age might be advantageously considered. Unfortunately this was what they could not accomplish, for they could never say exactly how any patient would respond to the effect of the rays upon the ovaries. If the treatment was carried to the length of producing amenorrhoea in young women, the question was whether this was done without upsetting the internal secretion arrangements of the ovary. He thought this could not be done without such a consequence, and therefore there was a clear and decided contraindication to the administration of Roentgen therapy in young women. He thought operation should be advised in all cases of fibromyomata in women under 38 years of age needing treatment. Another important point was the selection of suitable cases. The tackling of large tumours, subperitoneal fibromata, or cervical myomata, in his experience only ended in failure. The medium-sized soft interstitial fibroid with a rich blood supply was the variety of myoma with which the greatest success would be obtained. Such tumours would, clinically, practically disappear. He did not dispute Dr. Knox's statement that a considerable time—several months—might have to be taken in order to effect a result, but if the time were compared with the time it took a patient to get over the operation of supravaginal hysterectomy the *x*-ray treatment would not appear at such a disadvantage. Perhaps it took eighteen weeks to bring about the desired result with *x*-ray treatment, and at the end of that time, and for some weeks previously, the patient felt better than she had felt for years (to quote an expression these patients often used), but could the same be truthfully said of a patient eighteen weeks after she had undergone supravaginal hysterectomy for fibromyomata? As a rule it took a patient anything from six months to a year to recover completely from a severe abdominal operation. Further, under *x*-ray treatment the patient was never laid up except for the remainder of the day after each treatment. He thought, therefore, that it must be admitted that *x* rays would cure the patient more quickly than surgery, and the time factor was one of the advantages and not one of the disadvantages of radio-therapy. His constant fear with regard to *x*-ray therapy in women was the effect of the radiations upon the internal secretion of the ovaries. Certainly there were menopausal symptoms; these in the vast majority of his cases had not been severe, and were readily controlled by the administration of small doses of bromide, but it could not be denied that menopausal symptoms varying in severity did occur shortly after effecting amenorrhoea, whereas after hysterectomy with

conservation of the ovaries these symptoms did not arise for some few years. It must also be remembered, however, that removal of the uterus tended to cause early atrophy of the ovaries, resulting in the early onset of the sensory symptoms of the menopause. Finally, Dr. Knox had said that in almost every case submitted to long exposure the patient complained of nausea; in one case the speaker had known actual vomiting to set in a few hours after treatment. Dr. Knox suggested that this might be due to the inhalation of ionized air and ozone. Might it not be due to peritoneal irritation caused by the rays?

Dr. AGNES SAVILL (London) spoke of the advisability of fewer exposures and shorter doses, so as to avoid *x*-ray sickness. She had employed the method advocated by Dr. Katherine Chapman of Glasgow, who gave a pastille dose through 3 mm. of aluminium and a layer of vulcanite, and used six portals of entry on the anterior abdominal wall on three consecutive days once a month, just after the period. Amenorrhoea resulted in three months. Dr. Béclère of Paris gave even fewer exposures, and not quite one pastille dose, through two portals of entry (10 cm. diameter) once a week; a 5 mm. aluminium filter was always used, and pressure on the skin was made by a thin plaque of wood placed in the lead cylinder.

Dr. WILLIAM MITCHELL (Bradford) considered that the criticisms by Dr. Williamson and Dr. Cuthbert Lockyer regarding the want of exactitude of statement as to dosage, its frequency and total amount, in papers dealing with *x* irradiation were well founded. In every case the exact method of measurement should be detailed, whether by Sabouraud's pastille, or by Holzknecht's or Kienboeck's method, and, in the case of the first, the position of the pastille in relation to filter and to patient should always be stated. He considered that the question of dosage and duration of treatment should rest with the radiologist, as obviously the gynaecologist was not the proper person to decide. A dose of *x* rays can be measured as accurately as a dose of strychnine, and the only two essentials in stating it are the filter and the dose as measured by the pastille *underneath* the filter.

Dr. S. GILBERT SCOTT (London Hospital) said that a discussion on any form of treatment usually produced two types of critics—those who overestimated and those who underestimated its value. Dr. Knox had steered a middle course—in fact, if anything, he had erred on the side of underestimation. This was as it should be, for the speaker did not think any of them, either radiologists or gynaecologists, were at present in a position to pass final judgement—this for two reasons: (1) sufficient material was not forthcoming, and (2) it was only since the advent of the Coolidge tube that it had been possible to give anything like consistent and effective dosage. The technique used in these cases was on similar lines to that employed in any deep-seated lesion. Most workers had their little variations, which probably did not alter the results. It was well to emphasize the fact that this class of work should only be undertaken by those proficient in deep-seated therapy, either radiologists or gynaecologists, as he was certain the results depended to a great extent upon correct dosage for each particular case. The same dose was not efficient for every patient, and only experience would indicate what variation would be most efficacious. Those who were uncertain about their dosage could be divided into two classes—those who played for safety, and over-filtered, probably with inefficient apparatus or unsuitable type of ray, in which case the tumour received a minimum dose; and those who feared nothing and gave an overdose to the skin and probably only a minute dose to the tumour. If this happened they became cautious, and then went probably to the other extreme of under-dosing. As Dr. Knox had stated, there was at present no accurate method of judging the dose received by a deep-seated tumour. The whole question was very complex. Dosage to each individual case should be decided by the radiologist, not by the gynaecologist, but the radiologist was dependent on the gynaecologist as to the suitability of the case. The effect of treatment might be summarized as follows: (1) The relief of symptoms; (2) permanent stoppage of growth; (3) reduction in size. This, to his mind, was the order of importance. The patient would not thank them for reducing size without relief of symptoms. He wished to emphasize another of Dr. Knox's points—namely, that the radiologist must work in conjunction with the gynaecologist. He (the speaker) refused to treat a patient unless she had been examined by a competent man. If this was not done, mistakes in diagnosis would be made, and the radiologist got the blame for not curing a case which was unsuitable from the first. No form of treatment was going to cure all cases, and the general practitioner was the one who could give the most reliable opinion as to the ultimate result of any method. He was certain that those of them who had had cases of fibroids in any number efficiently treated by *x* rays were well satisfied with the ultimate results. These satisfactory results were dependent on two factors—efficient dosage and careful investigation of the case before treatment. From his own experience he was convinced that the treatment was of great importance, but slipshod methods would result in disappointment. The estimation as to the true value of this treatment in this country was hampered by want of material, but this could be rectified by the gynaecologist. There was plenty of hospital material in which operation could be delayed for, say, six months in order to test the method. It was incumbent upon the radiologist to see that his apparatus and technique were efficient if he undertook the treatment, and it was essential that the gynaecologist and the radiologist should collaborate.

Dr. FLORENCE A. STONEY, O.B.E., gave details of eight cases of fibroid cured by treatment with *x* rays. In all cases she used a filter of 3 mm. of aluminium, and measured the pastille dose (Sabouraud) after filtration. No evil results ensued in any of these cases, beyond slight nausea in one. Treatment was given to six or fewer areas below the umbilicus, and also through the sciatic notches. Twenty-one days intervened before a second dose was given to the same area. As a rule, three doses to each area were enough to bring about the menopause. Dr. Stoney added that among the advantages of *x*-ray treatment were the non-necessity of the nursing home or of confinement to bed, except during the monthly period, no serious or dangerous illness, no risk of embolus or sudden death, no severe nervous upset. The menopause was easy as a rule; partial menopause was obtainable at will, some uterine tissue was left which was natural, treatment was devoid of discomfort, though somewhat tiresome, and nausea was quite unnecessary. Dangers were at a minimum in competent hands, and for younger women partial atrophy by *x* rays was much to be preferred to the mutilation of hysterectomy. These were essentially cases where the gynaecologist and radiologist should work in unison, each recognizing the other as a specialist, and not dictating the course of treatment when they had not a command of the technique. If any bad results became known as a consequence of *x*-ray treatment, these should be substantiated and published as a help to everyone, but such results must be really shown to have been brought about by *x* rays; the *x*-ray treatment should not be challenged on vague inferences merely. *Post-mortem* findings after radiation would be of great value if they could be obtained, also operation findings subsequent to radiation.

Dr. SHILLINGTON SCALES (Cambridge), who had read Dr. Knox's paper in his absence, replied upon the discussion. He agreed that our present methods of treatment were largely empirical, and that the methods of each worker, whilst arriving at the same result, differed so considerably in detail, both with regard to dosage and filtration, that it was not possible to lay down any accepted standard, such as was asked for by Dr. Cuthbert Lockyer. No worker, accustomed to his own methods, and feeling his personal responsibility, would consent to carry out unquestioningly a prescription of dosage and technique ordered by a physician, or even a gynaecologist, whose experience in this respect was less than his own. If the gynaecologist were really qualified to give such instructions he would have the wide practical experience which would entitle him to carry out the treatment himself. But Dr. Cuthbert Lockyer's disclaimer of the necessary knowledge gave the answer to this point. Dr. Shillington Scales cited examples of instructions which

were given to the radiologist which were manifestly based on insufficient knowledge. He noted with satisfaction Dr. Williamson's explanation that adverse developments after *x*-ray treatment were not necessarily the results of such treatment, and suggested that a more formidable list could be cited as occurring after operative treatment. The fact was that our knowledge of the biological effect of *x* rays was still very vague, just as until comparatively recently we were ignorant of the very nature of *x* rays, and, moreover, our methods were subject to so much change and advance, to say nothing of improvement in tubes and other apparatus, that it was quite impossible at present to standardize technique.

A Post-Graduate Lecture
ON
CLINICAL MANIFESTATIONS OF THE MOBILE PROXIMAL COLON.

DELIVERED AT ANCOATS HOSPITAL, MANCHESTER.

BY
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IN any endeavour to elucidate the question of the clinical importance of abnormal mobility of the caecum and ascending colon, it is necessary briefly to recall the light thrown upon the subject from the different angles of human embryology and of comparative anatomy.

Embryological Evidence.

In early intrauterine life the mid-gut loop, extending from the duodenum at the opening of the common bile duct to the splenic flexure of the colon, is suspended from the middle of the spine by a single dorsal mesentery, of which the superior mesenteric artery forms the axis. (Fig. 1.) During the fourth and fifth months of development this U-shaped mid-gut loop undergoes a counter clockwise rotation round its axis. The caecum, originally a diverticulum on the posterior limb of the loop, swings round through three-fourths of a circle until it lies in the right hypochondrium under the liver. Here it may occasionally remain as an "undescended caecum," a condition that gives rise to those rare but puzzling cases in which an inflamed appendix is found in close relation with the gall bladder. Usually, however, during the later months before birth a gradual descent of the caecum into the right iliac fossa follows, and as a result the ascending colon and hepatic flexure become recognizable parts of the large intestine. (Fig. 2.) This process is contemporaneous with the descent of the testis or ovary, and probably results from the same mechanical causes.

Meanwhile a separate and very remarkable process of peritoneal fusion has been going on. First the great omentum grows down over the front of the transverse colon and adheres to it. Then the primitive mesenteries of the ascending and descending colon disappear. (Figs. 3 and 4.) These segments of the colon fall back against the posterior parietal peritoneum in the right and left sides of the abdomen, and become permanently fixed in position by fusion of the mesocolon and peritoneum covering the posterior surface of the bowel with the parietal peritoneum. The great omentum at this stage takes a far more active part in the posterior fixation of the ascending colon than has been generally recognized, and one reminder of the part it plays is often seen in the structure known as Jackson's pericolic membrane.[1]

Evidence of Comparative Anatomy.

The explanation of this phase of intestinal development is obvious from a study of comparative anatomy. If we examine a series of mammalian types, in which the mid-gut loop undergoes rotation closely analogous to that in man, we find a lack of this peritoneal fusion, and a consequent persistence of the original mobility of the ascending and descending colon, in the pronograde animals only. Thus the dog and the lower monkeys have a colon that is completely mobile. But as we trace the series up through the lower pronograde monkeys to the higher anthropoids, we find the fixation of the colon progressing *pari passu* with the adoption of the erect posture, until, in an orthograde animal such as the chimpanzee, the fixation differs in no material degree from that in the normal human type.

We are thus led to the inevitable conclusion that fixation of the ascending and descending colon is evolved as a necessary adaptation to the upright posture.

In the course of evolution individuals with the more mobile type of ascending colon (for mobile descending colon is an excessively rare anomaly) have been in some way handicapped in the struggle for existence and have tended to succumb. Let me try to explain some of the various ways in which this lack of adaptation to the upright posture may show itself in man, for it is a very common and, I believe, a very important developmental defect. In some 20 per cent. of individuals of all ages you will find some degree of abnormal mobility of the caecum and ascending colon.

MANIFESTATIONS IN ACUTE ABDOMINAL EMERGENCIES.

1. *Ileo-caecal Volvulus.*

In October, 1918, I was asked to see a lady, aged 68, who had been suddenly taken ill three days before, with acute abdominal pain and vomiting. The pain had attacked her in intense spasms for the first twenty-four hours, but for the last two days it had been more continuous. She had absolute constipation and had passed no flatus, in spite of repeated enemata. She was a thin woman, with sunken features and a foul, dry tongue. The pulse was 110 and thin. In the mid-line of the lower abdomen was a large rounded tumour, standing out visibly through the thin abdominal wall. It was rather tense on palpation, and gave a deep tympanitic note on percussion. No caecum could be palpated in the right iliac fossa. A diagnosis of volvulus was made, and an operation performed. On opening the abdomen through a median incision below the umbilicus, a huge dilated caecum popped out. It was found that the distended parts consisted of the lower five inches of the ileum, the caecum, and the lower half of the ascending colon. They were extremely mobile, and mounted on a long mesentery continuous with that of the small intestine. They had undergone clockwise rotation to the extent of one and a half turns. There was no actual gangrene, but the tension of gas in the caecum was so great that the serous coat was beginning to split. The whole volvulus was uncoiled with ease, the appendix removed, and appendicostomy performed by stitching a rubber catheter into its stump and fixing the stump of the appendix to the parietal peritoneum. This procedure both relieved the enormous distension and fixed the caecum so as to prevent recurrence. Her recovery was uneventful. The catheter was removed on the seventh day, and the wound healed without any leaking of caecal contents.

Ileo-caecal volvulus is a rare condition as compared with volvulus of the pelvic colon, and it has a very high mortality. It is obvious that an essential predisposing cause is failure of the normal posterior fixation of the caecum and ascending colon, for without this abnormal mobility the rotation that obstructs the bowel could not take place.

2. *Intussusception.*

In all the discussions that have taken place on the etiology of intussusception attention has tended to be concentrated on the mechanism by which the process starts. Is the invagination started by a localized spasm of a segment of the bowel or by a localized paresis? It is an interesting pathological problem, and I believe the evidence is in favour of spasm as the exciting cause. But far too little attention has been given to a predisposing cause of intussusception that is almost always present. I refer, of course, to lack of peritoneal fixation of the proximal colon. It is obvious that this factor does not influence the rare enteric form of intussusception. But in the common form in which the ileo-caecal valve forms the apex, or the ileo-colic form in which the lower ileum first prolapses through the valve until it jams, and then the ileo-caecal region travels along the colon, we find, invariably in my experience, a definitely abnormal mobility of caecum and ascending colon, with persistence of the ascending mesocolon, and very often a definite Jackson's pericolic membrane. It is sufficiently plain that in the presence of firm fixation of the back of the caecum and ascending colon to the parietes, any extensive degree of

intussusception could hardly take place. I believe that the much maligned ileal band of Lane (or genito-mesenteric fold of Douglas Reid) is also, when present, a very effective safeguard against the common forms of intussusception.

I need hardly remind you of the classic symptoms of acute intussusception—the abdominal pain, at first in intermittent spasms, with intervals of repose; the vomiting and constipation with the passage of blood and mucus by the rectum; and very often the typical sausage-shaped tumour in the abdomen. But it may be well to point out that the symptoms of intussusception are not always classical. I was recently asked to see a female child, aged 14 months, who had been perfectly well until seven days before, when she began to scream with pain for a few moments at intervals of thirty minutes or so, hyper-extending her back and legs during the attacks. She had vomited once slightly on the first day, but not since. The bowels had been opened daily, and no blood had been seen in the motions. The spasms of pain had recurred day and night at fairly short and regular intervals during the whole seven days. The child was well nourished and in fair condition. The abdomen was held too rigidly for satisfactory palpation, but no caecum could be detected in the right iliac fossa. In some faecal material on a napkin there was an appreciable excess of mucus. A diagnosis of intussusception was made. At operation a large ileo-caecal intussusception was found with its apex as far down as the splenic flexure. It was reduced easily and completely. The proximal colon was not only extremely mobile, but very wide in diameter, and this accounted for the lack of complete obstruction. After reduction I sutured the caecum and ascending colon back into the right loin as a precaution against a possible recurrence. The child made a normal recovery.

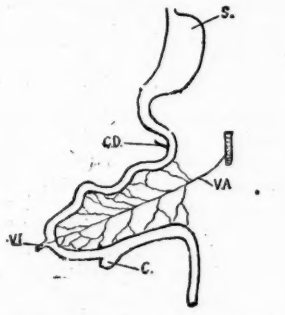

FIG. 1.—Diagram of U-shaped mid-gut loop before rotation. S, Stomach; C D., common bile duct; V.A., vitelline (superior mesenteric) artery; V.I., vitello-intestinal duct; C., caecum.

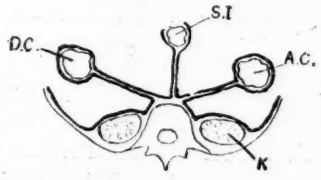

FIG. 3.—Diagram of transverse section through abdomen, showing peritoneal arrangement before fixation of colon (after Huntington). A C., Ascending colon; S.I., small intestine; D.C., descending colon; K, kidney.

The operation of colopexy and caecopexy, anchoring the colon to the posterior parietal peritoneum, should, I consider, be performed as a routine after reduction of the intussusception, for a recurrence of the condition is by no means uncommon without it.

CHRONIC MANIFESTATIONS.

Far more common than these acute catastrophes are the chronic manifestations of the mobile proximal colon. In the more frequent type the patient complains of chronic constipation and pain in the right iliac fossa. The pain is usually worse after food, on exertion, and when the bowels are particularly constipated. It is described as a dull ache or a dragging pain, and the patient gives no history of a previous attack of acute appendicitis. There is often some associated sensation of flatulence and discomfort in the epigastrium, though this is more variable in its relation to the taking of food than in gastric or duodenal ulcer. Some tenderness on palpating the right iliac fossa is found on examination, and often palpable splashing and gurgling in a dilated caecum. *X*-ray examination after a barium meal and enema affords valuable confirmatory evidence of the condition. When screened in the upright position the caecum and ascending colon are prolapsed, so that the hepatic flexure lies down on the false pelvis, and the caecum may pass over the pelvic brim into the true pelvis. Screened in the left lateral position the loaded mobile proximal colon sags across the mid-line to the left, and the caecum may even be seen in the left iliac fossa. In this left lateral position the extent of attachment of the hepatic flexure can be most readily estimated.

On exploring the abdomen in such cases by an incision through the right rectus, the peritoneal attachments are found to be so lax that the caecum and the greater part of the ascending colon can be lifted out of the wound well above the level of the abdominal wall. More often than not the appendix shows no signs of inflammation. The attachments of the hepatic flexure vary. In some cases a firm, broad peritoneal band containing some fibrous tissue fixes it to the lower pole of the right kidney (the nephro-colic ligament) or to the parietes close to the kidney or to the gall bladder. In other cases the hepatic flexure is so singularly devoid of firm fixation that it can be readily drawn out of the wound along with the ascending colon. The doctrine that abnormal mobility of the right kidney is invariably associated with mobility of the proximal colon is by no means in conformity with my experience, though the association is undoubtedly frequent.

Less commonly the patient complains, in addition to the symptoms already described, of sudden acute attacks of pain in the right iliac fossa, with a sense of swelling in that region, and often nausea or actual vomiting. These attacks seldom last longer than an hour or two, and may subside in a few minutes. When seen during such an attack the caecum may be found greatly distended, and tender on palpation. The explanation of such sudden crises is to be found in a partial volvulus of the mobile ileo caecal region, or an acute kinking at the hepatic flexure.

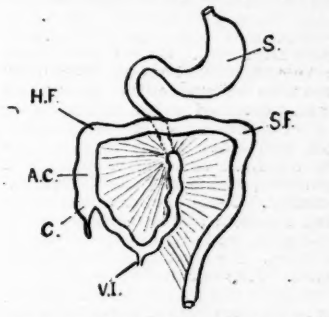

FIG. 2.—Mid-gut loop after rotation and partial descent of caecum. S., Stomach; V.I., vitello-intestinal duct; C., caecum; A.C., ascending colon; H.F., hepatic flexure; S.F., splenic flexure.

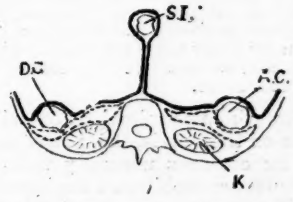

FIG. 4.—Transverse section showing peritoneal arrangement after fixation of ascending and descending colon (after Huntington). A.C., Ascending colon; S I., small intestine; D.C., descending colon; K, kidney.

But how are we to explain the more chronic symptoms—the constipation and the aching pain in the right iliac fossa? It is one thing to affirm that the mobile proximal colon is ill adapted to the upright position. It is quite another to explain the precise mechanism by which the symptoms are produced. We must be willing to admit that there are large gaps in our knowledge of the physiology and pathology of the colon, and we must avoid an undue craving for a simplicity of explanation that may not be reconcilable with all the clinical and pathological data. The colon, as is now well known, propels its contents, not by unceasing peristaltic movements like those of the stomach and small intestines, but by strong short thrusts, lasting only a few seconds, and occurring in normal conditions only after the principal meals. In a normal individual this gastro-colic reflex works smoothly, and causes no subjective sensation. But in a patient with the developmental abnormality that we are considering the ascending colon is hampered, in its task of pushing on its semi-solid contents against gravity, by the lack of the purchase it should derive from firm fixation to the posterior abdominal wall. Ineffectual contractions fail to force all its contents round the hepatic flexure, but the ileum passes more fluid contents through the ileo-caecal valve despite this failure. Distension of the caecum results, and is responsible for the pain in the right iliac fossa. When fixity of the hepatic flexure is combined with a very mobile ascending colon there is probably a tendency, when the colon swings into certain positions allowed by its lax attachments, for an acute angulation at the flexure to occur, amounting to a transient intestinal obstruction.

The epigastric pain so often felt is probably referred from the downward drag of the overloaded caecum on the ascending mesocolon. When operating on cases under spinal anaesthesia I have often noticed that if any traction on the caecum was exerted the patient complained at once of sharp pain in the upper epigastrium, although the abdominal incision had been completely painless.

Putrefactive changes in the stagnant caecal contents and a chronic catarrhal inflammation of the mucosa no doubt play a part in producing both the local pain and the general toxaemia associated with the condition, and as a result of this inflammatory process one frequently sees a calcareous lymph gland along the ileo-colic artery in these cases.

It is a fact of some clinical importance that the more extreme degree of mobility, in which the hepatic flexure is so loosely attached that it drops on to the false pelvis in the erect posture and can be lifted well out of a right rectus incision, often produces less severe symptoms than those resulting from a mobile caecum and ascending colon, combined with a fixed hepatic flexure. The following case is a striking illustration of this:

Lieut.-Colonel D., aged 39, had suffered from an extreme degree of general enteroptosis for many years, with attacks of flatulent pain in the epigastrium, and sometimes in the right iliac fossa, which came on one to two hours after food. He had never been particularly constipated. In August, 1919, about an hour after lunch, he was suddenly seized with severe central abdominal pain and urgent vomiting, and presented every symptom of high intestinal obstruction. After eight hours the pain suddenly and spontaneously passed off, and when I saw him in consultation an hour later there was little to be made out beyond a very marked *habitus enteroptoticus*, with easily elicited splashing in both stomach and caecum. *X*-ray examination three days later showed a low-lying stomach and extremely mobile proximal colon, with the hepatic flexure lying down well below the iliac crest in the erect posture. No ulcer in the duodenum was detected by the radiologist. Exploratory operation confirmed the *x*-ray findings as regards the extreme enteroptosis, but revealed a chronic ulcer in the first part of the duodenum, with a flake of recently deposited fibrin on its peritoneal surface. I took the view that his previous symptoms had been due rather to the ulcer than to the enteroptosis. Accordingly, posterior gastro-enterostomy was done, the duodenal ulcer infolded, and the appendix removed. Nothing at all was done for the mobile proximal colon, in view of the very general splanchnoptosis associated with it. The soundness of the procedure adopted was demonstrated by his subsequent progress. All the indigestion and flatulence, which had been for many years attributed to his enteroptosis, at once left him, and he has lived an active life without restrictions as to diet ever since.

In such a case, where the whole proximal colon with the hepatic flexure lies down on the pelvis, the bowel has more chance of propelling its contents normally than if the ascending colon and caecum are mobile and the hepatic flexure fixed and kinked. The case may be used also to point another moral. It should not too readily be assumed that a patient with a mobile proximal colon has no other lesion. Such patients are far more prone to develop appendicitis, gastric or duodenal ulcer, and gall stones than those whose alimentary canal has not had a lifelong struggle against gravity by reason of its abnormal mobility. We do not yet know the precise manner in which gastric or duodenal ulcers or gall stones result from the caecal stagnation and catarrh associated with the mobile proximal colon. Nor for that matter do we entirely understand how hyperchlorhydria and gastric or duodenal ulcer result from chronic inflammation of the appendix. In both cases the clinical fact of their frequent association is well established, but many gaps in our knowledge need to be filled by further pathological investigation. I think, however, that we know enough to reject quite confidently the mechanical theory recently advanced by Waugh,[2] who suggests that the downward drag of the mobile ascending colon through its mesocolon may produce destruction of tissue in the fixed second part of the duodenum and cause duodenal ulcer. Alternatively he suggests that where the duodenum and pyloric end of the stomach give way under the strain and become prolapsed, there is a tendency for the line of strain to be transferred to the lesser curvature and cardiac end, producing an ulcer there. Without attempting to justify his very questionable hypothesis that a gradual drag exerted on the peritoneal aspect of the duodenum or stomach would produce ulceration of their mucosa, he asserts that the second part of the duodenum is "the site that is most liable to ulceration." But the experience of most surgeons shows that ulcer is very common in the first part and relatively very uncommon in the second part of the duodenum. Mr. Waugh further remarks that "if the mode of formation of these ulcers has been rightly assumed . . . a mobile ascending colon should be present in all cases." To one who can recall, as I can, a large number of cases of both gastric and duodenal ulcer in which it has been most difficult to expose the appendix through the ordinary upper rectus incision owing to normal fixation of the ascending colon, it will hardly appear that the mode of formation has been rightly assumed by Mr. Waugh.

OPERATIVE TREATMENT.

The ideal method of dealing with the mobile proximal colon is to fix it back in the right loin in the position that we have seen is the normal one for the orthograde primate. This may be done by the method of Coffey,[3] or by the method recently described by Waugh.[2] A considerable experience of the former method has taught me that it is often very difficult through the ordinary right rectus incision to fix the colon in a way that approximates to the normal, and there is the further difficulty that fixation by firm and unyielding scar tissue is a poor substitute for the firm but elastic support afforded by the normal peritoneal fixation of the colon. Accordingly I have latterly adopted the alternative course of reducing the load of the overburdened caecum and ascending colon by the simpler method of plication. After removal of the appendix, a continuous suture of fine thread picks up the anterior and lateral longitudinal taeniae from the base of the appendix, and is carried as far up the ascending colon as the dilatation appears to require. By this method the lumen of the caecum and ascending colon is permanently narrowed without in any way hampering the contraction of the bowel, and the clinical results have been in my experience very satisfactory.

The drastic operation of colectomy, either partial or total, with its considerable mortality, is one that should be reserved for cases with the most extreme disability, and should only be undertaken when the procedures devoid of any appreciable danger have failed to give relief.

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Remarks
ON
A CASE OF HEPATIC CIRRHOSIS ALLIED TO HANOT'S DISEASE.

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THIS case, though a single one, is perhaps worth publication on account of the failure to arrive at a correct diagnosis during life, the histological appearances of unilobular and intralobular cirrhosis, and the light recently thrown on such cases and on the problem of biliary cirrhosis by the experimental work of Peyton Rous and Larimore, of the Rockefeller Institute for Medical Research.

A boy, aged 11 years, had influenza in December, 1918, and since then had never been well. In April, 1919, he became drowsy, and in May came under observation at the Victoria Hospital for Children. On May 23rd he was shown at the Section for the Study of Disease in Children, Royal Society of Medicine, as "a case for diagnosis," by Dr. E. A. Cockayne.[1] At that time there was slight jaundice with a trace of albumin and of bile pigment in the urine, which was high coloured but free from excess of urobilin. The faeces were normal in colour and consistency. The blood count showed 6,100,000 red blood corpuscles per cubic millimetre, 6,400 leucocytes, with a differential count of polymorphonuclears 54 and mononuclears 46 per cent. The Wassermann reaction was negative. There was an evening pyrexia of 100° to 101° F. The boy was somewhat wasted, with a slightly dark skin, which was free from any haemorrhages or spider-angiomas. There were no enlarged glands. The abdomen was distended, but there were no dis-

tended veins visible, and no ascites. The liver was much enlarged, both lobes being smooth and free from tenderness, and the spleen was palpably enlarged. Dr. Cockayne considered that the condition was due to abdominal tuberculosis, and with this view other speakers agreed, though the possibility of lymphadenoma and of post-influenzal hepatitis was raised; but Hanot's hypertrophic biliary cirrhosis was not suggested. The boy then went to a convalescent home, and on October 10th was readmitted to the Victoria Hospital for Children, where he remained until his death on June 13th, 1920. On readmission it was noted that he had lost flesh, was still slightly jaundiced, ran an evening temperature of 101° F., had a rapid pulse rate, usually over 130 per minute, and a soft apical systolic murmur. A skiagram showed that the heart was purse-shaped, suggesting mitral disease, but there was no evidence of any intrathoracic growth. The leucocyte count of 6,200 per cubic millimetre showed 64 per cent. polymorphonuclears, 23.5 per cent. small lymphocytes, 7 per cent. large lymphocytes, 4 per cent. transitionals, and 1.5 per cent. hyalines. The Wassermann reaction was negative as before. The abdomen was distended by the enlarged liver, measuring from 27 to 29 inches according to varying flatulence, and showing enlarged veins over the surface. The urine often contained bile pigment. Ascites was not obvious until April, when the jaundice became much more marked, and the patient, who in the first quarter of the year had shown some general improvement, although the temperature and pulse-rate had remained much the same, went downhill. Early in June diarrhoea with incontinence supervened, and the ascites necessitated tapping on June 8th, 50 ounces of clear yellowish-green fluid being removed. He then became semi-comatose, and died on June 13th.

Necropsy.

The body is extremely emaciated and intensely jaundiced; the eyes are deeply sunken; the malar arches very prominent. There is no subcutaneous fat. No rigor mortis present. Tongue, fauces, pharynx, tonsils, trachea, and bronchi are all normal; the cervical and mediastinal glands also. The pleura on the left side is adherent by recent easily broken down bands. There is no fluid. The right is free and also without fluid. Both lungs are healthy. The pericardial sac contains about 2 oz. of clear fluid, but there is no pericarditis. The heart is normal; the peritoneum contains about a pint of clear fluid. There are no adhesions and no inflammation. Stomach and small and large gut healthy. Adrenals and kidneys normal. The spleen weighs 11½ oz. It is soft and pulpy; there is no fibrosis. It is densely adherent to the stomach. The pancreas forms an extremely hard nodular mass across the middle line. There is no evidence of new growth, but the organ appears extremely fibrotic.

The liver is much enlarged and weighs 3 lb. 6 oz. The surface is smooth, but the capsule wrinkled, as though the organ had recently undergone some shrinking in size. It is fairly but not extremely tough. The anterior edge is rounded, smooth, and regular. There is no perihepatitis, for the capsule is normal, without any thickening or opacity, and strips freely and cleanly. The surface, both externally and on section, is mottled with small green areas, each surrounded by strands of grey tissue, which similarly forms a zone about every vessel. The gall bladder is small and contains a little bile. Its mucosa is perfectly healthy. The cystic, hepatic, and common bile ducts are normal in appearance. The hepatic and portal vessels present no abnormality. The brain and meninges are healthy.

Microscopic Examination.—Sections of the liver under the microscope show a well marked unilobular, together with an even more prominent intralobular cirrhosis. All the lobules are surrounded and separated from each other by wide strands of connective tissue from which narrower strands are given off and penetrate the individual lobules. Occasionally an islet of three to six liver cells lying in intimate contact with each other may be found, but such a condition is very rare, and practically every cell is isolated from its fellows by intervening connective tissue fibres. The fibres are coarse and the cell nuclei small and deeply staining; there is no evidence of any very active proliferation of these elements. The cells of the parenchyma present all degrees of degeneration. As a rule, those in the outer zone of the lobule, in the neighbourhood of the portal vessels, show least change, then those about the central venules, while those in the intermediate zone are most affected. The last have in many cases undergone extreme fatty degeneration; often the cell body is distended and completely occupied by a large fat droplet; sometimes the fat occurs in minute droplets scattered throughout the cytoplasm. It stains readily with osmic acid or Scharlach R. Here and there an area is found in which the cells are filled with coarse granules of dark-green almost black pigment, which is certainly of biliary origin. These areas are situated about a branch of the portal vein, and are accompanied by a slight leucocytic infiltration of the connective tissue. Nowhere are the hepatic cells quite normal; many are completely destroyed, leaving nothing but a granular débris, others show some degree of karyolysis, while the rest vary much in size and shape, and the staining power of nucleus and cell body and the cytoplasm is finely granular. They have apparently passed into a state of exhaustion beyond the stage of irritation in which some proliferation may occur, for it is only in extremely few instances that any signs of mitosis can be discovered. The blood vessels do not show any changes, but are sometimes surrounded by a narrow zone of very mild leucocytic infiltration, and sometimes a more or less extensive (microscopically) extravasation of blood through one of the fibrous septa or amongst the parenchymal cells is found. It has been impossible to discover either mast cells or plasma cells. The bile canaliculi are patent and free from any inflammatory change; there is no cholangitis nor pericholangitis. Careful and prolonged search, however, reveals some evidence of bile stasis, in addition to the pigmentation already mentioned. Now and then a plug of inspissated bile is found occluding a bile capillary in its intralobular portion, either in the middle zone of the lobule or just as the capillary leaves the lobule and enters Glisson's capsule.

The indications of biliary stasis are thus by no means well marked. The areas of pigmentation are rarely met with; in them the pigmentation of individual cells is not extreme, and bile thrombi are very few in number. Pseudo-bile canaliculi are very numerous throughout the perilobular connective tissue. They are for the most part solid columns of cubical or columnar cells, and few if any of them present a lumen. The spleen shows some excess of fibrous tissue elements, but sections of the pancreas do not reveal any abnormality whatever.

REMARKS.

During the nine months of the boy's second stay in the hospital the diagnosis was uncertain; the rapid pulse rate (120 or over) and the mitral murmur at one time suggested that the large liver was cardiac, and that the condition might be that described by Hanot as hepatic asystole, in which the hepatic manifestations are more prominent than those of the primary cardiac lesion, as in the remarkable case recorded by one of us[2] of a child aged 3½ years, regarded during life as primary sarcoma of the liver, with well marked dilatation of the subcutaneous abdominal veins, pointing to a collateral circulation between the superior and inferior venae cavae; the necropsy showed chronic venous engorgement of the liver only. Digitalis was therefore given a full trial in our case, but without any beneficial effect. New growth was also seriously suspected, but as time went on this possibility was narrowed down to some rare and innocent condition such as an angioma or a simple cyst; though exploration was often considered, the diagnosis never justified this. Hypertrophic biliary cirrhosis was not suspected.

The main clinical features of the case—namely, the large liver and spleen, jaundice, fever, chronicity, and absence of ascites until late in the course of the disease—are, at any rate on paper, those of Hanot's hypertrophic biliary cirrhosis, and histologically the unilobular and intralobular cirrhosis approach the changes described as characteristic of that disease. But both clinically and histologically there is a want of prominence, if it may be so expressed, of the biliary element. The jaundice was slight until late in the course of the disease; but, as it was present throughout, the case cannot be regarded as one of the anicteric hypertrophic biliary cirrhosis described by the French. Then histologically evidence of biliary stasis, such as bile thrombi in the intralobular bile canaliculi or pigmentation of the hepatic cells, was extremely slight, and there was no inflammation of the small bile ducts. The type of cirrhosis corresponds fairly closely with that produced experimentally by Rous and Larimore.[3] By ligature of the bile channels of one lobe of a rabbit's liver and of the branch of the portal vein to the remainder of the organ, thus diverting all the portal blood into the lobe with biliary stasis, these workers succeeded in producing an intralobular cirrhosis which they regarded as due to biliary stasis at the level of the intralobular bile ducts. The presence of a few bile thrombi in these vessels in our case indicates some degree of stasis at this level. The unilobular cirrhosis, on the other hand, they regard as the outcome of stasis in the small bile ducts in Glisson's capsule at the margins of the lobule, where again a few bile thrombi existed in our case. Here also were situated those cells in which pigment had been deposited. The evidence of biliary stasis is thus most marked at the boundary between the lobules and Glisson's capsule, and it would consequently appear probable that the unilobular fibrosis was the first to make its appearance. Later, stasis was brought about further back within the lobules, and then the intralobular cirrhosis appeared. In our case the stasis was nowhere marked nor comparable in intensity with that produced in the extended and careful experimental research of Rous and Larimore, although the degree of fibrosis was practically the same. A possible explanation of this difference is afforded by the fact that in their rabbits the complicating factor of infection of the liver was always eliminated, whereas in our case this disturbing factor, though not proved, was rendered highly probable by the long-continued fever. It is noteworthy

that the unilobular cirrhosis was that of Hanot's disease, but the intralobular was much more prominent than that regarded as characteristic of that condition.

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THE INFLUENCE OF OVERCOOKING VEGETABLES IN CAUSING SCURVY AMONG CHILDREN.*

BY
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(Report to the Lister Institute and to the Medical Research Council, London.)

IN April, 1919, 40 cases of scurvy occurred among the 64 children from 6 to 14 years of age under treatment for tuberculosis in the University Kinderklinik, Vienna (Professor C. v. Pirquet).

The first case, observed on April 12th, had pain in the jaws, swollen, tender, and discoloured gums, and later swollen and tender knees. On April 14th two more cases were reported and developed symptoms of the same severity. Subsequently 37 fresh cases occurred, the last on April 28th; in all of these the symptoms were mild and confined to gums and jaws.

From April 18th to April 28th 45 lemons were provided daily for the 64 children in the section, and extra spinach, "Kraut," and raw onions were added to the diet. The scorbutic patients received also a preparation made by boiling pine tree needles in water. After April 28th extra supplies of fresh vegetables were obtained. In all cases the symptoms subsided in ten days, and in most in four or five days. In the majority of cases the weight charts show a temporary arrest in growth during the attack, but in no instance was there any evidence of a prolonged retardation.

The admirable arrangements of this hospital render the outbreak exceptionally favourable for study. A very accurate system of calculating food requirements has been elaborated by Professor v. Pirquet, and, as far as calories are concerned, each child has always received enough without any excess. The unusually complete records of diet which are kept as a routine measure permit of detailed analysis, and the average amount of each article of diet taken by each child can be accurately determined. Singularly full records are also kept of the growth in size and weight and the general condition of the patients, all of which were placed freely at our disposal by Professor v. Pirquet and his staff.

At the time of the outbreak there was no corresponding prevalence of scurvy in the general population, and the conditions which determined its onset have to be looked for inside the hospital and primarily in the food.

Analysis of Diet.

The articles of food consumed in the Tuberculosis Section of the Kinderklinik have been classified into:

(1) Those known to possess slight value or none for prevention of scurvy—flour, oats, barley, eggs, cheese, condensed milk, lard and other fat, dry beans and peas.

(2) Those possessing marked antiscorbutic properties—green vegetables, potatoes, other root vegetables, fresh meat, and fresh milk.

The comparative values of the foodstuff under (2) are given in Table I below. The figures are based on quantitative experimental work carried out at the Lister Institute on guinea-pigs and monkeys.[1] In many cases the values have been confirmed by recent therapeutic trials in Vienna on infantile scurvy (Barlow's disease). The values of the fresh materials are, of course, much diminished by the ordinary procedure of cookery.

TABLE I.—*Showing Comparative Antiscorbutic Value of Equivalent Weights.*

Fresh lemon or orange juice, raw	100
Fresh cabbage leaves or expressed juice, raw ...	100
Fresh cabbage leaves, cooked at 100° C. for twenty minutes	30
Fresh cabbage leaves, heated 70° to 80° C. for sixty minutes	10
Fresh swede turnip juice, raw	60
Fresh tomatoes, raw...	60
Fresh green beans, raw	30
Potato, cooked at 100° C. for thirty minutes ...	7.5
Fresh carrot juice, raw	7.5
Fresh beetroot juice, raw ... ... less than	7.5
Fresh beef juice, raw ... ... less than	7.5
Fresh cow's milk, raw	1 to 1.5
Dry beans, peas, lentils, etc., raw ... less than	7.5
Germinated beans, peas, lentils, etc., raw	30

The possible influence of meat has been disregarded in the present investigation. Even when raw its antiscorbutic value is small and it must be consumed in very large amounts—for example, 500 grams and upwards per person daily[2]—if scurvy is to be prevented by its agency alone. During the six months preceding this outbreak the weekly average per patient was less than 300 grams. We do not consider either that fresh milk has played any important part as an antiscorbutic in the present instance. At the best its antiscorbutic value is low, and owing to disorganized transport it was almost certainly heated twice before reaching the children. Up to the end of January, 1919, the average daily ration was never more than 250 c.cm., and during February and March this steadily declined to about 30 c.cm. More condensed milk was then used, but the value of this product is even less than that of fresh unheated milk. No fruit was taken. The average consumption of green vegetables, potatoes, and other root vegetables is given in Table II. The outstanding feature of this analysis is the deprivation of the most effective antiscorbutics after the middle of February. During the autumn of 1918 there appears to have been a generous provision of green vegetables, potatoes, etc. This was on the whole maintained during January, 1919, but there was a great falling off in February, which became still more marked in March.

These data appear to show clearly that a daily ration of about 80 grams root vegetables is insufficient to protect from scurvy, and we are of opinion that the marked shortage of all vegetables during the eight weeks from the middle of February to the middle of April was the immediate precipitating cause of the outbreak. If, however, this were the whole explanation, it is remarkable that such a short period of deprivation should cause widespread recognizable scurvy. For adults the necessary period has been fixed at from four to eight months, and oftener perhaps nearer the longer time.[3] For children there appears to be no definite information beyond the fact that symptoms are rarely seen in infants less than 6 months old.[4] It is not unlikely that the period for children is less than that for adults in correspondence with their greater metabolism, but there do not seem to be any grounds for taking it as shorter than four months.

TABLE II.—*Average Daily Consumption by each Patient in Grams.*

Date.	Green Vegetables.	Potatoes.	Other Root Vegetables.	Total Vegetables.	Milk.	
					Fresh.	Condensed.
1918.						
September-October ...	102	114	15	231	188	30
November-December .	62	110	62	234	225	16
1919.						
January	30	130	68	228	190	112
February (first half) ...	0	55	92	147	33	215
February (second half)	0	0	101	101		
March	0	0	77	77	28	105
April (first fortnight) .	12	1	53	66	0	80

In the present instance the allowance of vegetables up to two months before the first cases appeared was more than 200 grams daily, which is not less than is usual in many private households during the winter, and may be expected to prove adequate for prevention.[5] A similar allowance, 250 grams daily fresh vegetables, is a common ration for soldiers on active service, and instances must be numerous in which this amount has failed temporarily without appearance of scurvy in so short a period as eight weeks. In the present case, therefore, the antiscorbutic taken in the previous months should have enabled these children to withstand eight weeks of comparative deficiency. It did not do so, and we are forced to conclude that while the supply of vegetables was adequate the supply of antiscorbutic was defective.

* A more detailed account of this investigation is being published in the *Zeitschrift für Kinderheilkunde.*

The explanation seems to lie in the method of cooking; this process destroys the antiscorbutic vitamine in proportion to the time and temperature of heating. The time of cooking is in general more important than the temperature, and it has been shown that quick heating at 100° C. entails less destruction than prolonged simmering at 70° to 90° C.[6] Outbreaks of scurvy in which excessive cooking of the vegetable ration has been considered an important contributory cause have been already placed on record.[7]

By the kindness of Professor v. Pirquet, and with the help of the sister in charge of the kitchen, we were enabled to study the methods of cooking employed in the kitchen of the Kinderklinik.

In cooking for institutions, where large numbers of people are concerned and large quantities of food have to be manipulated, the time taken in cooking must of necessity be much longer than is the case in small households. In Vienna, moreover, the usual method of preparing vegetables involves two separate cooking processes: they are first boiled till soft, and afterwards cooked again before serving, in an "Einbrenn" made from flour and fat. This double cooking involves a twofold destruction of antiscorbutic vitamine.

Similar methods of cooking vegetables have been employed in the kitchen of the Kinderklinik. Even potatoes are frequently twice cooked—first boiled or cooked in steam at 100° C., then sliced and cooked again with fried fat and onions. In the making of soups the root vegetables, tomatoes, green vegetables, etc., are subjected to a temperature of 90° to 100° C. for as long as three to four hours as a general rule. Following such methods of cooking, the loss of antiscorbutic value must be very extensive, if not almost complete. It is probable, therefore, that during the period (September, 1918, to February, 1919) when an adequate amount of fresh vegetables was provided, the diet nevertheless was a scurvy-producing one, due to loss of antiscorbutic vitamine during the cooking.

It would be easy to introduce slight modifications into the method of cooking which would avoid much loss of antiscorbutic material and would not alter seriously the present manner of preparing the food. The following are examples:

1. *Soups.*—In the making of soups the vegetables are first cut in small pieces, placed in water, and the whole cooked together for three or four hours. If green vegetables are used, or fresh tomatoes, as in "Kohlsuppe" or "Paradeissuppe," these also are subjected to the whole period of cooking. An improved method would be to add the sliced cabbage or the tomatoes, etc., shortly before serving the soup, so that the cooking should take place for as short a time as possible. When fresh fruit and vegetables are scarce it would be an excellent plan to grate the root vegetables and press out the juice, and to boil the dry pulp with the other constituents of the soup for as long a time as is needed, reserving the raw juices to be added just before the soup is served.

2. *Green vegetables* [Kochsalat (cos-lettuce); Kohl (cabbage), etc.] are washed, placed in hot water, heated to boiling point and kept at 90 to 100° C. until soft (about 1¼ hours). The water is then poured off, and only a little retained to add to the finished dish. The cooked greens are minced, heated a second time with an "Einbrenn" made of flour, bacon fat, onion, etc., water being added to make the right consistency. It would be better to steam the green leaves instead of cooking them in boiling water. The time of cooking could probably be shortened to twenty to thirty minutes, and the loss of antiscorbutic and other vitamines in the water (which is not consumed) would be avoided.

Germinated Seeds.—The use of germinated peas, beans, lentils, or other seeds as supplementary antiscorbutic materials where there is a shortage of fresh vegetables cannot be too strongly urged.

The method of preparation is as follows: The beans, peas, etc., are washed in water and left to soak for twenty-four hours at room temperature. They are placed in layers not exceeding 5 to 7 cm. in depth upon an ordinary kitchen sieve or other porous surface. They are kept moist by occasional sprinkling with water and with free access of air for 48 to 72 hours. At the end of this period rootlets varying from 0.5 to 1 cm. in length should be visible. The germinated seeds should not be allowed to become dry again, but should be cooked immediately. The cooking should be for as short a time as is necessary to render them soft and palatable. Placing in water for half an hour and then boiling for ten to fifteen minutes should suffice for small seeds such as peas and beans.

The antiscorbutic value of this germinated material has been determined by means of experiments with animals (guinea-pigs) and has been found, weight for weight, to possess about one-third the value of cabbage leaves in the raw condition.[8] It has also been successfully used in the prevention and cure of human scurvy.[9] It is interesting to note that dry peas, beans, and "czirok"* formed an important article of diet in the tuberculosis ward during the whole period under investigation. In the three months previous to the outbreak an average amount of 33.5 grams were consumed daily by each child. During the time of greatest dearth—that is, the eight weeks immediately preceding the outbreak—a daily average of 30 grams per head was consumed. When dry these pulses have a negligible antiscorbutic value, but had they been given in the germinated condition the ration of 30 grams would have represented the equivalent of about 60 grams of fresh vegetables, if not spoilt by overcooking. This extra allowance would have been of inestimable value in preventing the outbreak.

The incidence of scurvy in relation to the length of residence in hospital is of some interest, the children who had been in hospital for a longer period being affected a good deal more than the recent arrivals.

TABLE III.

Group.	Residence in Hospital.	Number.	Scurvy Symptoms.	Per Cent.
A	6 months or more ...	17	16	94
B	3 to 6 months	21	12	57
C	Less than 3 months ...	26	12	46

It has been pointed out above that the children in Group A had probably suffered long relative deprivation of antiscorbutic owing to the methods used in cooking their vegetables. The same conditions did not apply to Groups B and C, though it is certain that these children suffered deprivation in their homes before entering hospital, for the whole city was reduced to a food supply meagre in quantity and of the poorest quality during the winter 1918–1919, and fresh food was specially scanty. It is, indeed, remarkable that the conditions as regards scurvy were apparently less satisfactory in hospital than among the general population. Among the latter there was certainly no general outbreak of scurvy, and the children who had been but a short time in hospital were less disposed to develop the disease when the acute shortage of antiscorbutic came than those who had been in longer. The presumption is that during the six months or so preceding the outbreak the general population were getting more antiscorbutic than these hospital patients.

The possibility that admission to hospital precipitated the onset of the disease in Groups B and C is also worth consideration. There is considerable evidence that the demand of the body for antiscorbutic is in proportion to the rate of metabolism. In Group A the weight charts are very uniform and normal for seven months before the outbreak and show a normal rate of increase. Groups B and C, on the other hand, are composed of children who on admission were much below the normal age weight owing to general underfeeding. The diet of the Klinik, ample in calories, led to abnormally rapid growth, and this may well have had something to do with the onset of scurvy.

SUMMARY.

1. An outbreak of scurvy in April, 1919, affected forty children out of sixty-four aged between 6 and 14 years under treatment for tuberculosis.

2. From September, 1918, to February, 1919, a good supply of fresh vegetables and milk was available. From the middle of February to the middle of April the daily ration of fresh vegetables was reduced to about 80 grams per head; deprivation was never complete.

3. The eight weeks' period of shortage preceding the outbreak is a much shorter period than the four to six months noted by other observers as necessary for the development of scurvy.

4. It is concluded that though the supply of fresh food was adequate, the diet was nevertheless a scurvy producing one, and that the period of deprivation of antiscorbutic was longer than it appeared to be.

5. An explanation is found in the method for cooking food employed in the hospital which involves a serious

* A sort of buckwheat.

destruction of antiscorbutic. Suggestions are made as to means of preventing this.

6. The germination of dry peas, beans, and lentils before cooking is strongly recommended as a means of providing extra antiscorbutic when fresh vegetables and fruit are scarce or absent.

7. It is suggested that abnormally rapid growth may promote the development of scurvy in children.

In conclusion, we desire to express our gratitude to Professor v. Pirquet, who placed all his valuable records freely at our disposal, and to the members of his nursing staff who assisted us in every way in our investigations.

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TWO CASES OF CARCINOMA ALIVE EIGHT YEARS AFTER RADIUM TREATMENT.

BY

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ONE hears a good deal about apparent cures of cases of carcinoma by radium, in reports written soon after the treatment has ended, but little of what happens to these patients afterwards. The following two cases were seen eight years and one month ago, and radium treatment was started almost immediately.

CASE I.

In July, 1912, a man of 61, who had previously enjoyed excellent health, but was a heavy smoker and took alcohol fairly liberally, sent for me because he had noticed a swelling on the right side of his neck. He also complained that for some months he had had some irritation of the throat, and was continually expectorating small amounts. A hard indurated ulcer with everted edges, of about the size of a shilling, could be seen and felt below the right tonsil. The swelling in the neck was a large mass of hard and fixed lymphatic glands. He was seen by various surgeons in London and the provinces, and all agreed in the diagnosis of carcinoma of the pharynx, quite beyond operative interference.

In spite of the poor results obtained by radium in cases of carcinoma of the pharynx, I determined to give it a trial. I started by giving two applications of radium a week from the outside of the neck, and continued till the skin could stand no more without risk of ulceration, when I lessened the amount of radiation. The whole side of his neck was radiated as far down as the clavicle. At the end of a month there was a decided improvement, both of the primary growth and of the glands.

At the end of six months all signs of disease had completely disappeared. Notwithstanding this, I continued to apply radium about once a week with a few short intervals, when the patient or myself were away, for another six months. He had his last application in July, 1913. Since then he has had no signs whatever of any recurrence, and to-day, eight years after, at the age of 69, he is in excellent health, and able to lead a busy life.

CASE II.

A lady, aged about 60, complained in July, 1912, of a swelling in her right breast. It presented the usual signs of scirrhous carcinoma, and was adherent to the pectoral fascia. There were hard glands in the right axilla, but the supraclavicular glands appeared normal. The right breast was amputated and the axilla cleared.

A piece of the growth from the breast and the whole of the mass of glands and connective tissue removed from the axilla were sent for pathological investigation. The report was that the tumour was a scirrhous cancer, and that not only did the axillary glands exhibit signs of secondary infection, but the fat of the axilla also was largely permeated by cancer cells. It was apparent, therefore, that it was impossible for surgery to have removed the whole of the diseased structures, and as soon as the wound had completely healed I started radium treatment. The whole of the axilla and right side of the chest was rayed, and this was repeated till the skin showed signs of intolerance. Treatment was not left off till July, 1913. During this time there were no signs of recurrence. In November, 1913, a small swelling appeared over one of the ribs near the scar, suspiciously like the commencement of a recurrence. Radium treatment was resumed forthwith, and the swelling soon subsided. I continued applying radium till May, 1914.

She has remained free from symptoms till lately, when she complained of a cough, and I found rhonchi and râles over the chest, more marked on the right side, but no bronchial breathing. I also think I can detect some enlargement of the liver, but she is stout and the abdomen is difficult to examine. She is a sufferer from rheumatoid arthritis, and is too infirm from this to be willing to undertake a visit to have her chest *x* rayed, so the diagnosis remains in doubt, but the signs are very suspicious of a recurrence in the lungs and liver.

From the above notes I think it can be fairly claimed that Case I has probably been cured by radium, and Case II has to thank radium for eight years of life, though the chances are that she is after all going to succumb to carcinoma.

If more observers would publish the late results of similar cases that they have been able to follow, it would much help our knowledge of this important subject.

SODIUM BIBORATE IN THE TREATMENT OF EPILEPSY IN AN ASYLUM.

BY

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ON the male side of this institution there are about 60 epileptics, or 11 per cent. of the total number of male patients. The majority are chronic cases, and a large number of them have been resident for many years.

Formerly the routine treatment was a large dose of potassium bromide (gr. xxx) night and morning. Examination of the ward books, in which a record is kept of all fits in epileptic patients, shows that this has had little effect in reducing the number of fits or bringing about any mental improvement. The only change noticeable was a lessening of excitability and an increase of mental confusion.

Sodium biborate is mentioned in medical textbooks as an alternative to potassium bromide. Eight months ago I decided to try a mixture containing potassium bromide and sodium biborate. The treatment was commenced on December 27th, 1919, on the patient J. D. quoted below. The results were so striking in his case, after a fair trial, that it was decided to apply the treatment more widely. The benefit of the treatment has been very marked in all the wards; in two, where the treatment has been in use for four months, the fits have been reduced by 64 per cent., and in two other wards in which the treatment was commenced about six weeks ago there has been a reduction of 68 per cent., and that amongst patients who formerly had fits at regular intervals. It is interesting to note that in the male hospital four of the patients have had no fits since commencing treatment about July 20th. Previous to treatment, three of them never went longer than eight days without having fits, and the other averaged twelve days and then had a bout of from three to five fits.

The following three cases may be quoted as striking examples:

CASE I.

J. D., aged 40, admitted March, 1918; Wassermann negative. From admission until treatment was started the patient was subject to violent uncontrollable attacks of excitement at intervals ranging from three to five weeks. These attacks lasted from one to seven days; the more violent the outburst the shorter the duration. Sedatives had very little effect, and his violence was such that frequently at night attendants were on special duty at his bedside. He also suffered from auditory hallucinations and delusions of suspicion. Since the commencement of treatment, in December, 1919, these outbursts of epileptic furor have disappeared entirely. The fits have been reduced by about 65 per cent., and this in spite of lapses in the treatment of three weeks at one time and two weeks at another. These intervals without treatment were tried to see the effect of stoppage, and in each case the fits returned. His mental condition has improved. There is now no stupor after a fit, and the patient states that he now "feels his head clear."

CASE II.

J. F., aged 33, admitted May, 1917; Wassermann negative. This patient states that he started to "take turns" when he was 11 years of age. On admission he was irritable, quarrelsome, and very impulsive. He was a most troublesome patient, and had fits regularly and in bouts. Treatment was commenced on April 5th, 1920, and his fits have been reduced 86 per cent. He has had none since May 6th. Mentally he is clearer, his memory has improved, he gives no trouble, and now expresses the desire to be allowed out to do some work.

CASE III.

A. B., aged 20, admitted October, 1919; Wassermann negative. This patient, epileptic since childhood, was always in a more or less stuporous state and had very severe "G." fits frequently, and mostly in bouts. Four months' treatment has reduced his fits by 62 per cent. Mentally he is much brighter, and the dazed condition after a fit has disappeared.

The total number of patients in whom the above treatment has been tried so far is forty-two; in all there is a marked improvement in the mental state of the patients, and in all except one the number of fits has been reduced. In addition to the marked mental change and lessening of the fits, other points noticeable are the great reduction in the amount of sedative used, and the marked diminution in the number of accidents which occur.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

LABOUR COMPLICATED BY MARKED ELONGATION OF THE SUPRAVAGINAL CERVIX.

THE following case presented such unusual clinical features as to justify recording it in detail.

Mrs. D., aged 31, when admitted to the gynaecological wards of the Royal Victoria Infirmary, Newcastle-on-Tyne, was within a few weeks of full term. There was a marked degree of cervical prolapse; the cervix projected 4 in. beyond the vulva, the lips being oedematous and ulcerated, and the external os patulous. The bladder also was completely prolapsed, so that she had great difficulty in emptying it. The cervical prolapse was associated with elongation of the supravaginal cervix. The condition had first attracted attention one year previously (one year after the birth of her second child), and had steadily progressed, especially since she had become pregnant. She had been confined to bed for six months before admission.

Treatment consisted of rest in bed till full term, cleansing of the cervix by suitable dressings, and urinary antiseptics for the associated cystitis. Replacement of the cervix in the vagina was invariably followed by prolapse, and attempts to retain it by means of gauze packing were not satisfactory, the pressure of the child's head and the bladder inflammation being the two chief obstacles. The relaxed condition of the ostium vaginae also favoured recurrence. Contrary to what occurs in non-pregnant cases, the cervical oedema did not appreciably lessen by rest in bed.

Labour: *First Stage.*—The membranes ruptured shortly after the onset of labour. The liquor amnii was turbid and somewhat offensive. The cervix was at once pushed into the vagina, and did not again spontaneously prolapse during this stage. The pains were frequent and strong; the cervix was slowly drawn up, and the external os dilated gradually. The child's head was in the pelvic cavity.

Second Stage.—Seventeen hours after the onset of labour the patient showed signs of exhaustion. At this stage the external os was almost fully dilated, but a distinct rim persisted round the periphery of the head. The patient was anaesthetized and forceps applied. On traction being made the head and cervix descended together, and it was quite impossible to push up the rim of the cervix past the head. The actual delivery of the head was identical in every way with delivery over a tight perineum. The external os at this period of labour projected fully an inch beyond the vulva. After delivery of the head the os closed slightly on the child's neck, and the shoulders were freed with some difficulty. The rest of the delivery was normal.

Third Stage.—Ample time was allowed for the placenta to separate naturally, but, owing to rather free haemorrhage, an attempt was made to express it. This resulted in complete prolapse of the cervix and bladder, even more exaggerated than that existing before the onset of labour. The parts were replaced, and a further period passed before a renewal of the bleeding made another attempt at expression imperative. This reproduced the state of affairs described above, and manual removal was decided upon. After thorough cleansing and liberal use of tincture of iodine the hand was inserted, and the cervix was found to consist of a long tube with a marked contraction ring at the internal os. This was slowly dilated and the placenta removed. There was no evidence of laceration of the cervix. A copious intrauterine douche completed the procedure.

Apart from a transitory febrile attack due to cystitis, convalescence was uneventful. The cervix remained exposed, and was carefully guarded by gauze dressings. The patient was discharged some weeks later with the cervix still protruding, but is returning in due course for radical treatment.

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VOLVULUS OF THE WHOLE OF THE SMALL INTESTINE.

THE following case is of interest by reason of its rarity:

A weakly boy, aged 18, was admitted to hospital in a dying condition. He had only been at work three weeks after an attack of pneumonia and pleurisy. On the previous afternoon he had eaten fish, followed by an ice-cream, and had then played football. At 6 p.m. he complained of a dull ache in the epigastrium and of nausea; he went to stool, but with what result is unknown. He was never sick. Hot fomentations were given through the night, but the pain grew worse; he was moved to hospital at 8.30 a.m., and died half an hour later. On admission it was clear that he was dying of general peritonitis. A large left scrotal hernia was distended and tender, and the whole abdomen was distended, rigid, and tender; the liver dullness was normal. The boy was too ill for further examination. At the autopsy it was found that the whole of the small intestine from the first free loop of the jejunum to the ileo-caecal junction was strangulated by one and a half complete twists of the mesentery. There was collapse of the whole of the large bowel, and the small bowel was plum-coloured and distended; there was free blood in the lumen of the bowel and in the peritoneal cavity. The hernia, though filled with bowel by reason of the increase of abdominal pressure, was easily reducible through a very large ring. No Meckel's diverticulum nor other anomaly could be found as an exciting cause.

It is difficult to imagine any dietetic or athletic achievement capable of turning the whole of the small bowel through three half-turns. Probably the twist was of developmental origin, and was aggravated to strangulation by some sudden congestion (caused perhaps by injudicious dietary).

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Reviews.

MENTAL DEFICIENCY.

IN the volume on *Mental Deficiency*[1] by Dr. A. F. TREDGOLD the medical practitioner will find a sound and trustworthy guide to a subject in respect to which it is now almost essential that he should have a more than superficial knowledge. The second edition was published in 1914; the text has been revised and brought up to date, and the new edition will undoubtedly maintain the position attained by its predecessors and become the standard work on mental deficiency. The book is the product of personal research, extensive clinical experience, wide acquaintance with the literature of the subject, and an intimate knowledge of the social problem which the presence of the mental defective in the community creates. On controversial questions the author develops his own personal views, which are based on experience, a ripe judgement, and a critical survey of current theories; but he is free from bias and dogmatism, and he approaches such questions as heredity, environmental influence and causation in a clear, balanced and scientific manner.

In the first chapter, which is concerned with the nature of mental deficiency, the author indicates clearly and convincingly that it can only be satisfactorily defined in terms of social behaviour. Throughout the book the point is emphasized that the disorder of mind is not merely in the sphere of intellect, but that it is a defect of the personality as a whole which prevents these congenital defectives from reacting efficiently and subsisting by their own unaided efforts. It is this treatment of the clinical aspect of the subject from the adaptive side that gives the book its great practical value. Those who are actually concerned with the problem of the mental defective will here find the greatest help in relation to those cases which present a real difficulty in practice. The difference between the dull or backward child and the high grade ament, the relation between vicious tendencies and mental deficiency, and, above all, the question of the moral imbecile, are subjects which are here dealt with in an exceptionally lucid and masterly fashion. In referring to the statutory definition of mental defect in relation to moral imbecility, Dr. Tredgold writes (p. 360):

In my experience the failure to appreciate the meaning of the term (permanent mental defect) is the chief stumbling-block in the diagnosis and certification of these cases. It is necessary

[1] *Mental Deficiency* (*Amentia*). By A. F. Tredgold, M.D., F.R.S.Edin. Third edition. London: Baillière, Tindall, and Cox. 1920. (Demy 8vo, pp. 531; 67 figures.)

to point out that the definition says "mental" and not "intellectual," for there is a great difference between these as ordinarily understood. A person who has a good scholastic record . . . is commonly regarded as being free from any intellectual defect. Nevertheless, he may have a pronounced *mental* one. For . . . normal mind includes much more than mere intelligence of this kind. It includes the capacity to appreciate the difference between right and wrong—that is, moral sense; and it further includes that higher controlling faculty which enables a person to regulate his conduct and shape his life—that is, wisdom. A defect in either of these qualities is a real mental defect, and, if it is permanent, it comes within the terms of the definition.

Such observations as these will help the medical man to formulate impressions which he could otherwise only put in a vague fashion, and they will enable him to act with confidence and precision in cases which, without this help, would cause him much anxiety and lead to indecision.

Dr. Tredgold deals with the question of incidence, and while his statistics indicate a prevalence of mental defect which constitutes a serious social menace, there is no doubt that with an increasing activity on the part of local authorities a more accurate census will reveal a much greater prevalence than the present figures suggest. The author deals fully with pathology, classification, neurophysiology and psychology; he furnishes clinical descriptions of the various forms of mental defect; he describes the methods of examination and mental tests; he devotes attention to treatment, legal questions, certification, and criminal responsibility; and he concludes with a study of amentia from the sociological point of view.

We can thoroughly recommend this book, and it will probably find an even wider public than was won by previous editions in so far as there are signs that the social impulse in the direction of mental hygiene is finding increasing expression in this and other countries.

GREEK SCIENCE AND MODERN SCIENCE.

THE eagerness with which many varying theories of education are accepted, and the vehemence, often intolerant, with which they are defended, are proof that we have lost the old orientation, and have not yet found the true bearings for the new course. The uncertainty affects all kinds of education—elementary, secondary, and higher—with the one exception of the classical system, the old humanities. Medical education has not escaped the general unrest and uncertainty, as our pages have recently borne witness; it is, however, only a particular case of a general condition of mind. Dr. CHARLES SINGER has an explanation and a remedy; they were propounded in the lecture with which, last May, he inaugurated the first experiment made at University College, London, for the institution of systematic instruction in the history of scientific thought. His lecture dealt with *Greek Science and Modern Science*,[2] and his thesis was somewhat as follows: The function of education, perhaps its main function, is, he thinks, to provide each generation with a working theory of how it came to be what it is. Such a working theory was provided by the old humanities from the period of the revival of learning until a generation or two ago. It is admitted that the whole scheme of education is now undergoing rapid transformation; the discipline of science is largely replacing the training afforded by the older humanities, and, in the near future, the staple education will be increasingly vocational. But though science may displace the humanities, it is not in itself, as commonly taught and studied, capable of replacing them, for it cannot give us a working theory of how we have developed mentally.

The remedy Dr. Singer has to offer is the study of the history of man's thoughts; not the history of events, wars, politics or social systems, but of the phases through which man has passed in his attempt to read the riddle of the universe, which includes the mystery of his own being. The riddle it, may be objected, is insoluble, but the endeavour to solve it is an innate quality of the human mind, and some answer has been given by every race and in every epoch. Dr. Singer believes that in history so regarded we shall find a discipline and an apparatus which will give unity to the discrete sciences of this day. He turns, as every one who embarks on this great argument must, to the Greeks, and compares and contrasts their methods in science, or rather their attitude to external nature. The Greek was self-centred. He began with his own mind and its workings, and moved outwards to the synthesis of natural phenomena; the modern method is almost the converse. Greek science had a basis in philosophy which modern science lacks; the Greek philosopher, it is true, ventured to make large generalizations on a very slender bundle of facts; his gift to the development of scientific thought was his conviction of order, his faith that order reigns in nature. This Dr. Singer truly calls a great and most vital contribution to scientific thought. But it is not the whole matter; modern science shares with the Greeks a faith in order, but it asks for proofs where its great predecessors were satisfied to trust to intuition, and demands details of methods where they were satisfied to be given conclusions. Dr. Singer concluded his lecture by pleading that while records should be complete, they should likewise be clear and succinct, so that our successors may not waste time in repeating work already done, but be able to begin where we leave off.

[2] *Greek Science and Modern Science.* By C. Singer. London: The University of London Press, Ltd. 1920. (Price 1s. 6d. net.)

DISEASES OF THE LIVER AND PANCREAS.

THE new *Traité de pathologie médicale et de thérapeutique appliquée*, edited by Émile Sergent, Ribadeau-Dumas and Babonneix, is advertised to consist of thirty-two volumes. This extensive series on the theory and practice of medicine is designed to deal mainly with the clinical and therapeutic aspects and to contain but little historical matter and only so much pathology as is necessary to explain the symptoms. The first volume to reach us is that on the liver and pancreas, by CASTAIGNE, BRULÉ, FIESSINGER, GARBAN and FAROY,[3] and is a useful summary of the views of the French school which has done so much to advance our knowledge of hepatic disease. Thus Brulé, whose monograph *Recherches récentes sur les ictères* was noticed at some length in our issue of September 27th, 1919, writes in conjunction with Garban on jaundice, and insists on the importance of disordered action of the liver cells, as opposed to obstruction in the intrahepatic ducts, as the cause of jaundice in many conditions. In his account of haemolytic jaundice Brulé does full justice to Chauffard's observations on the characteristic fragility of the red blood corpuscles, and makes an interesting reference to the transitions and relations between haemolytic jaundice and pernicious anaemia. More than half the space devoted to the liver is contributed by Brulé, who also writes on inflammation of the gall bladder and bile ducts, hydatid cysts, malignant disease of the liver and biliary tract, hepatic abscess, perihepatitis and degenerations of the liver. Hepatic cirrhosis is broadly divided by Fiessinger, who has done a large amount of histological work on this subject, into two clinical categories, the ascitogenic and the icterogenic, the former being further subdivided into chronic atrophic and chronic hypertrophic ascitogenic hepatitis and pigmentary cirrhosis. Hanot's cirrhosis, the existence of which as a condition distinct from portal cirrhosis has been often doubted by English-speaking authorities, is fully described and the varieties detailed, a syphilitic form being recognized. The article on cholelithiasis, also by Fiessinger, is largely based on Chauffard's numerous contributions to the subject. The diseases of the pancreas are dealt with by Dr. Faroy in an up-to-date manner.

INDIAN MEDICAL JURISPRUDENCE.

THE *Textbook of Medical Jurisprudence and Toxicology*,[4] which has been written by RAI BAHADUR JAISING P. MODI, is intended for the use of students in medical colleges and schools. It is admirably adapted for this purpose, and also supplies a well ordered and indexed manual for reference and guidance to medical and legal practitioners. As might be expected, the peculiarities of law and procedure affecting criminal deeds in India and

[3] *Foie et Pancréas.* Par J. Castaigne, M. Brulé, N. Fiessinger, H. Garban et G. Faroy. Tome xii. Traité de pathologie médicale et de thérapeutique appliquée, publié sous la direction de Emile Sergent, L. Ribadeau-Dumas, et L. Babonneix. Paris: A. Maloine et Fils. 1920. (Demy 8vo, pp. 462; 38 figures. Fr. 22.)

[4] *A Textbook of Medical Jurisprudence and Toxicology.* By Rai Bahadur Jaising P. Modi, L.R.C.P. and S.Edin., L.R.F.P.S.Glasg., Lecturer on Forensic Medicine, King George's Medical College, Lucknow. Calcutta and London: Butterworth and Co. 1920. (Double demy 16mo, pp. 705: illustrated. Rs. 10 net.)

their detection are dealt with throughout the book, and a series of useful appendices record the various Acts and Regulations, questions and forms, which are prescribed and employed in cases which call for the aid and expert knowledge of the medical jurist.

Special difficulties arise in India as regards medico-legal work, among them early decomposition, methods of disposal of the dead, concealment and false testimony, faking and imputation for purposes of revenge; on the other hand, the dominance of *dustoor* (habit) and the prevalence of traditional criminal practices facilitate detection. As regards the latter, such customs as widow burning, leper burial, infanticide, road poisoning, dacoity, and human sacrifice are almost obsolete, and the raising of the age of consent and discouragement of premature marriages have diminished the rape of children and other sexual offences. These matters are dealt with, and the author's experiences of actual cases are occasionally inserted. The arrangement of material is systematic and lucid, and a copious index renders access to the contents of the volume easy. A feature in the composition of the book is the printing of subjects intended for more advanced students and practitioners in small type. This is specially manifest in the section on toxicology. The diction employed is clear and idiomatic, with some few exceptions. The misuse of the definite article is, however, obtrusive throughout the book. On the whole, the work is most creditable to the author, and constitutes an excellent example of the good results of general and medical education among the natives of India.

NOTES ON BOOKS.

Dr. Walter E. Masters has written for the use of students of tropical medicine and practitioners in the tropics a bulky volume, entitled *Essentials of Tropical Medicine*.[5] An attempt is made to traverse the whole field of the subject, but this has become practically impossible for any one man, and if an author has not full first-hand information on the subject on which he is writing he is apt to fall into errors. We have noted a number in this book, but will mention only a few: on page 42 it is said that amoebic dysentery frequently attacks the small intestine, but in truth the infection hardly ever occurs in the small bowel. On page 413 ponos is described as a special disease; the reader ought to have been told that it is a term used in Greece for a form of leishmaniasis occurring in the Mediterranean. There are also several omissions, which, in so extensive a subject, is not surprising. The idea of the book is excellent, and with a certain amount of pruning down and correction of error, the work should become of use to those for whom it is intended. At present we fear that it cannot be called a safe guide for candidates at examinations.

Practical Tropical Sanitation[6] is a small book written by Dr. E. P. Minett as a *vade mecum* for sanitary inspectors in tropical countries. It contains nine chapters on living abroad and on tropical diseases, on sewage and water supplies, on food and markets, on buildings and construction, on port sanitary work, and other subjects, all shortly but carefully dealt with. It is well written and should answer its purpose admirably. Much information, both interesting and valuable, is contained in its pages. The examples of by-laws for bakery and provision shops in British Guiana will be found useful for comparison and reference in other colonies. The book can be thoroughly recommended.

We have received a copy of a slender volume with the provocative title, *Gorgeous Poetry, 1911–20*,[7] by "J. B. M." It is printed in the approved style on thick paper with wide margins, and, as might be supposed, it is an elaborate parody of certain modern phases of verse making. We are at a loss to know why it should be sent for review in a medical journal; but, since it has given us a good deal of amusement, we feel constrained to introduce it to our readers. The author in his preface explains clearly enough why "this little book of absurdities" has been written: "Some of them are at least as funny as the more serious work of our English cliques." We agree. So far as we can judge from a limited knowledge of the writers whom he burlesques, he has succeeded in touching off most of their mannerisms and affectations and in showing them up for what they are. "I hate their work," he says, "not because they write of ugly things, but because they write so badly." It is a clever skit, though somewhat overlong, and perhaps it may do a little good. Far too much formless stuff, without metre or grace or rhythm, gets into print because of the present-day tenderness towards *vers libre*.

The Michelin Company is publishing a series of illustrated guides to the battlefields in France. One volume is given to the first battle of the Somme[8]; we find first a short statement of the objective of that offensive, and this is followed by a description of the battlefield, with its chalk downs overlooking the marshy valley of the river. The remainder of the book consists of an itinerary filling some hundred pages. It is copiously illustrated by photographs of ruined towns and villages of familiar name. A number of sketch maps will be very helpful to the motorist; the only criticism we have is that the whole tour is rather too much for two days.

[5] *Essentials of Tropical Medicine.* By Walter E. Masters, M.D., M.R.C.S., L.R.C.P. London: John Bale, Sons, and Danielsson, Ltd. 1920. (Roy. 8vo, pp. 708; illustrated. 42s. net.)

[6] *Practical Tropical Sanitation.* By E. P. Minett, M.D., D.P.H., etc. London: Baillière, Tindall, and Cox. 1920. (Cr. 8vo, pp. 136; 48 figures. 4s. 6d. net.)

[7] *Gorgeous Poetry, 1911–20.* By "J. B. M." First series. London: Philip Allan and Co. 1920. (Cr. 8vo. pp. 63. 2s. net.)

[8] *The Somme.* Volume I: *The First Battle of the Somme (1916–1917)—Albert, Bapaums, Peronne.* Clermont-Ferrand: Michelin et Cie.; London: The Michelin Tyre Co., Ltd. 1920. (Demy 8vo, pp. 136; 200 illustrations. 4s. net.)

APPLIANCES AND PREPARATIONS.

Nutresco Products.

In our issue of December 14th, 1912, a notice was published of several meat extracts and other food products manufactured by a South African firm, the Nutresco Company, Maritzburg, Natal; they were then found to contain unusually large amounts of soluble proteins, such as albumoses and peptones. Since that time the firm has extended its operations, and now manufactures a series of articles the main feature of which is stated to be the presence of considerable proportions of soluble and easily assimilable proteins, obtained by digesting beef by a special patented process. Samples of a number of the products in question have been submitted for examination and comment, and the results obtained are as follows:

Bovesco.—This is a semi-fluid meat extract intended for the preparation of beef-tea by dilution with water. The sample submitted is found by analysis to contain:

Real protein (almost wholly albumoses and peptones)	32.5 per cent.
Meat bases	10.7 ,,
Mineral matter	16.2 ,,

These results show that the article has a higher nutritive value than ordinary meat extracts, which often contain comparatively small proportions of real protein; it is almost wholly soluble in water, and the beef-tea prepared by following the directions has an agreeable flavour.

Neuresco.—This is a "nerve food" stated to contain soluble beef proteins in combination with milk proteins, flour, sugar, and mineral glycerophosphates, while it is also claimed that appreciable amounts of vitamines are present. Our examination shows it to contain:

Real protein	22.4 per cent.
Nitrogenous bases	0.3 ,,
Organically combined phosphorus, calculated as phosphoric anhydride (P_2O_5)	1.16 ,,

Qualitative examination shows the presence of flour and sugar. The proportions of protein and organic phosphorus are high. It is agreeably flavoured, and is readily prepared for use by mixing with milk and heating to boiling point.

Vinesco Invalid Port.—As its name implies, this wine is claimed to be especially suitable for sickness and convalescence owing to its content of soluble protein. Our analysis shows the sample supplied to contain:

Total nitrogen, calculated as protein	2.83 per cent.
Alcohol (by volume)	17.2 ,,

The flavour is agreeable.

Nutresco Invalid Food.—This preparation is somewhat like "Neuresco," and is prepared for use in the same manner. Analysis shows it to contain:

Total nitrogen, calculated as protein	28.5 per cent.
Fat	3.5 ,,

Qualitative examination shows that the other principal constituents are flour and sugar. The proportion of protein is high.

Carnesco Caramels.—These are chocolate-coated sweets of agreeable flavour; it is claimed that they contain digested beef-protein, in addition to butter and sugar. We find that the sample supplied contains:

Total nitrogen, calculated as protein	6.3 per cent.
Fat	25.4 ,,

Maltesco Preparations.—These are preparations of malt extract made in several brands.

Maltesco No. I is stated to contain 10 per cent. of digested "meat principles" in combination with a malt extract of high diastatic power. Our analysis gives:

Total nitrogen, calculated as protein	11.6 per cent.
Sugars, calculated as maltose	65.5 ,,

The high figure for nitrogen shows that the preparation contains about twice as much protein as ordinary malt extract. The flavour is agreeable.

Maltesco No. II.—This is similar to No. I, but contains a much higher proportion of "meat principles." Analysis of the sample supplied gave the following figures:

Total nitrogen, calculated as protein	20.3 per cent.
Sugars, calculated as maltose	54.0 ,,

The very high proportion of nitrogenous matter should render this a valuable preparation when it is desired to combine readily digested protein with malt extract.

Maltesco No. IV.—This is claimed to be a pure malt extract of high diastatic power. We find it to contain:

Total nitrogen, calculated as protein... ...	5.75 per cent.
Diastatic number (by the method of the *British Pharmaceutical Codex*)	549
Total sugars, calculated as maltose	70.5 per cent.
Mineral matter	1 39 ,,

The flavour is pleasant, while the above figures show good proportions of protein and diastase.

THE MUNICIPALIZATION OF HOSPITALS.

THE BRADFORD EXPERIMENT.

(Concluded from page 527.)

BY

CHARLES BUTTAR, M.D.

II.

THE site of the Bradford Poor Law Infirmary, which has now been leased to the City Council as a municipal hospital for five years, is bounded, except at one corner, by roads which will prevent extension of the hospital. The Council proposes to purchase the cottages at the corner of the area, and to close a small road leading to them. In this way the limit of expansion of an area already somewhat overcrowded with buildings, and defective in open spaces, will be reached. A certain amount of re building will be undertaken, and it is proposed to leave an open space at one point. Generally speaking the old Poor Law infirmary buildings will be used, though some of the wards would appear to be deficient in cubic space. A hospital of 1,148 beds is contemplated in ten pavilions. The medical wards will accommodate 502 patients, the surgical 324. To maternity cases 90 beds are allotted, to children 84, and to infants 40. The remaining 108 are for venereal cases. It is proposed to equip an out-patient department in the administrative block, so that four physicians or surgeons may attend at one time. This is regarded as sufficient accommodation at the moment.

In the medical officer's report on suggested administration of the hospital there are phrases which recall to mind the Dawson Report, although the conclusions reached seem widely different. Thus it is stated that "in this institution there should be brought together a highly specialized staff dealing with different aspects of disease." It is advised that in order to build up the hospital personnel on modern lines, and to make available to the city the best known treatment, the institution should consist of a conglomeration of smaller units. Each unit, it is proposed, should consist of a senior part-time officer, physician or surgeon, an assistant (also part-time), and a resident officer. For the present it is thought that two medical, two surgical, and one obstetrical and gynaecological unit will suffice. In the future three medical, three surgical, one gynaecological and several minor special departments are contemplated.

It seems, therefore, that the hospital will be organized and managed in the following way: The City Council, which is responsible for the whole management of the city, will delegate the care of the hospital to the Public Health Committee. This committee may perhaps work through a hospital subcommittee. The medical officer primarily responsible to the Public Health Committee will be the medical officer of health. The direction of the hospital will be in the hands of the medical superintendent of the old Poor Law infirmary, who has become a whole-time officer of the City Council. As he is a most efficient surgeon, he is to be made the senior of one of the surgical units, and, in addition to the whole hospital being under his administrative control, it is suggested that the medical staff, both resident and visiting, should be under his charge. Hence the position of this officer will be very similar to that of the officer in charge of a hospital in the army, only more so. He will perform the functions usually entrusted to the lay administration in a voluntary hospital—namely, the provisioning and equipping of the hospital and the control of the nursing and lay personnel. He will also be the administrator on the professional side, taking the place of the committee of the staff in voluntary hospitals, and, in addition, he will be one of the active surgeons on the staff.

The medical staff under the charge of the medical superintendent of the hospital will consist of part-time senior and assistant medical, surgical, and gynaecological officers, and of the residents attached to the units. With the five units at present contemplated there will be five senior officers, and five assistants; but four residents are considered sufficient. It is proposed that the senior officers shall be consultants or specialists employed for two hours each on four days a week. The remuneration suggested for this eight-hour week is £500 a year. The assistant medical officers may be general practitioners, would be employed for six hours a week, and would be paid £300 a year. The residents will be whole-time officers as in voluntary hospitals. No suggestion seems to have been made as to the rate of remuneration to be paid them. Patients will be admitted normally through the out-patient department, which is to be open apparently to any inhabitant of Bradford who may choose to avail himself of it. At the same time it is hoped that the out-patient department will also be fed from the following sources: From the various clinics now carried on for the City Council by whole-time medical officers, possibly by the outdoor Poor Law medical officers, and by the general practitioners of Bradford.

The number of hours' attendance each week required of the medical officers is regarded as a minimum. It is hoped that persons taking the appointments will be sufficiently interested in their work to spend, if need be, more than the required time. It may be pointed out, however, that the surgical consultants are unlikely to expose themselves to an unknown liability of this nature. No mention whatever is made of emergency operations, which not infrequently occur in the middle of the night. It is not probable that the resident superintendent, whose extensive duties have already been described, will undertake these emergencies; many of them cannot be left to the young resident. Will the consulting surgeon, who is paid the same remuneration as the physician who is not so liable for emergencies, face the possibility of these night calls?

There remains one interesting proposal in connexion with the senior medical officers in charge of units. After stating that they should have a university degree or be Fellows of one of the Royal Colleges, and should not be in general medical practice, the report goes on to say that they should not hold any other hospital appointment save with the consent of the committee (presumably Public Health Committee). Now this committee of the Bradford City Council proposes to purchase eight hours a week of a consultant's time for the sum of £500 a year. These eight hours are to be distributed over four days a week, presumably at specified hours. It is a little difficult to see why the City Council should be anxious to know what the consultant does with the remainder of his time. In what way do the councillors suppose that holding another appointment, say at a voluntary hospital, with different days and different times of visiting, is going to affect their service? On the other hand, is not the Council possibly depriving itself of the services of some of the more distinguished consultants of Bradford? May it not be found that a consultant at the Royal Infirmary, faced with the possibility that the City Council may order him to resign his association with that institution, will refrain from applying for appointment to the municipal hospital? It might be well for the Council to offer some explanation for this singular provision.

It would be interesting to know how the proposals with regard to the municipal hospital appeal to the general practitioner of Bradford. It has been pointed out that he may apply for the post of assistant medical officer to

a unit, and that ultimately there will be seven of these appointments, and possibly in addition some minor special posts. Also some general practitioners may have outdoor appointments similar to those of the Poor Law outdoor medical officers. Further, the general practitioner may be able to make use of the out-patient department for cases he would like to transfer thither. And, lastly, it is suggested that access to the hospital should freely be given to all medical practitioners, whether on the corporation staff or otherwise, who send in cases, and that they should be encouraged to follow up their cases and their treatment. But it is not contemplated that they should continue to treat the patient when he is in hospital. The proposal seems rather to be of the nature of post-graduate clinical instruction, derived from observation of the treatment adopted by the medical officers of the units. The general practitioner in many parts of the country, under the influence of the Dawson Report, has been inclined to imagine municipal hospitals wherein he will treat his own patients, call in a municipal consultant when required, have a voice in the organization through representatives on a medical advisory committee, and eliminate anything of the nature of an out-patient department, except possibly for purposes of consultation. Under the Bradford scheme it does not seem likely that these aspirations will be realized.

The whole community at Bradford, so far as I can gather, will be eligible for out-patient treatment in the municipal hospital, and for admission to the wards, if thought desirable for their treatment. The attitude of the population of the city to municipal health enterprises is interesting. Thus stories are told of people who are quite well off sending their infants to the child welfare clinic. It has been stated that the health visitors sometimes say to parents, "Your child is ill, it must be taken to the clinic"; and that the parents take the word "must" literally. Some doctors assert that their practice amongst children has almost ceased, except for those *in articulo mortis*. One doctor regarded Bradford as so municipalized that the City Council now takes charge of the whole population "from conception to cremation." Bearing in mind the statement of a city councillor, that "If they were to have a new hospital, let it be provided out of the rates, so that every man could regard it as his right and not as a charity," it seems clear that very extensive use will be made of the municipal hospital in the future. At any rate, the existence of a number of full-time officers, stated to exceed twenty, for the purpose of carrying on the communal services in Bradford justifies the assumption that municipal institutions are, and will be, well patronized.

It is proposed, apparently, that charges shall be made to patients admitted to the hospital according to the means of each. But no special amenities will be provided for those who pay the larger sums. All will be treated, warded, and fed in the same way. This proposal simply carries on the method of the Poor Law, and seems a reasonable proposition; and in any case the present and fixed limits of the hospital do not permit of any extension to more or less privileged paying patients. But in some quarters it is felt that the municipal idea is so ingrained in Bradford that it is not unlikely that in course of time the City Council may erect or acquire nursing homes to which such members of the community as prefer a measure of privacy may resort.

An endeavour has here been made to set forth as clearly as possible the proposals with regard to the future of Bradford's municipal hospital, which is already in existence. In conclusion, I may perhaps be allowed to indicate my own feelings on some of the proposals, and the lines on which I think those involved or interested in the scheme might reach a better understanding.

As regards the community of Bradford their attitude would seem to be such that nothing is likely to alter their determination to avail themselves of their municipal hospital, though many, even of the Poor Law patients, are anxious to pay their contribution towards their maintenance. Rate-supported hospitals have come and will come in increasing numbers. To the City Fathers of Bradford, however, certain suggestions may be made. Are they sure that they are wise in their endeavour to stamp out voluntary effort? Is it not possible that the Bradford Royal Infirmary, even if it has fallen on evil days, is something that they might reasonably be proud of? Again, may there not be many things in the management of voluntary hospitals which are worthy of adoption in hospitals under municipal control? Of such a nature, it may be suggested, is the system by which a committee of the staff is responsible for what may be called professional administration, rather than the method of placing a consulting staff under the charge of a whole-time medical superintendent. Again, it would seem well, in organizing a hospital, to enlist the sympathy and assistance of as wide a circle of the local medical profession as possible, rather than to proceed by methods of "secret diplomacy." Lastly, why should attempts be made to fetter part-time medical officers in the use they make of time which is not paid for by the City Council?

So far as the consultant in Bradford is concerned, it would seem that his right course is to take care that the conditions under which he accepts service in the municipal hospital are consonant with his position in the profession. And herein he should be helped by the powerful bodies with which he is associated. It should not be beyond the power of the Royal Colleges and of the British Medical Association to arrive at an amicable understanding with the City Council, seeing that only on such an understanding will the Council make its hospital a success. As regards the general practitioner, I feel that he is inclined to make claims with regard to his position *vis-à-vis* the hospital which can hardly be described as workable. Some modification is required; but mainly he should concentrate on obtaining a voice in the organization of such a venture as Bradford's by means of medical representatives or a medical advisory committee. Finally, may it not be well that the Minister of Health should withhold approval of a scheme embodying such principles as that of Bradford until some measure of consultation with the medical profession has been achieved?

WAR PROBLEMS IN CIVIL LIFE.

The aftermath of war has left many problems of treatment to be solved by practitioners and the medical officers of the Ministry of Pensions, many of whom have not had the opportunity of seeing the early and acute stages of the various diseases, and hence are handicapped in dealing with the chronic conditions which have supervened. The tropical diseases, trench fever, and gas poisoning, are instances of the new problems now facing the general practitioner, and to assist him by supplying in compact form information on these conditions the Ministry of Pensions has, in consultation with the Ministry of Health, issued a small handbook,[1] which should be in the hands of every medical man who may be called upon to deal with ex-service men. It has been prepared for the Ministry by Dr. G. S. Buchanan, Lieut.-Colonel S. P. James, Dr. G. Basil Price, and Dr. A. Bertram Soltau, each of whom has had special experience in dealing with these particular infections, and therefore it may be regarded as an authoritative presentation of established knowledge.

In the introduction attention is called to the tropical diseases clinics, which are now established by the Ministry of Pensions in all large centres, where consultative advice by specialists and, if necessary, treatment are available for all pensioners suffering from such infections. We understand that similar clinics for cardiac and for neurasthenic conditions are also being set up, and perhaps the Ministry will consider the advisability of issuing a handbook on these conditions like that now under review. The frank statement as to the misinterpretation of cardiac signs and symptoms which Dr. Thomas Lewis recently made at Cardiff[2] would suggest that the profession needs a good deal of further information on this subject. The more such knowledge can be disseminated the better it will be, for there is no inherent reason why the great bulk of the after-war conditions should not be treated by the general practitioners, thus obviating the necessity for the further extension of another specialized branch of State medicine. The Minister of Pensions recently stated that one-fifth of the medical men in the country were now engaged by his

[1] *Notes and Suggestions on (1) Dysentery and certain other Tropical Diseases, (2) Trench Fever, (3) Gas Poisoning and its Sequelæ, in Relation to Disabled Ex-Service Officers and Men.* H.M. Stationery Office. 6d. net.

[2] British Medical Journal, September 25th, 1920.

department either in whole-time or part-time work, an indication of the rapid extension which has been called for to cope with the existing need. Much of the work performed by these officials may well revert to the fully informed private practitioner.

Tropical Diseases.

As regards tropical diseases, the aid of laboratory workers is essential, and is emphasized in the handbook. For the diagnosis of malaria arrangements for the examination of blood films are in existence, and should be utilized whenever necessary. The treatment of malarial cases has already been outlined by the Ministry in a pamphlet, *Suggestions for the Care of Malaria Patients.* Special attention is now called to the diagnosis and treatment of blackwater fever, which has occurred in a certain number of men returned from the Balkan and Eastern fronts. The value of the spectroscope in diagnosis is pointed out, for haemoglobinuria is almost pathognomonic of the condition, and on its presence or not depends the use of quinine, which must be withheld immediately the blood destruction of this very serious complication of malaria is recognized.

The varieties of dysentery are fully described both in the acute and the chronic stages. The admission to special hospitals of all cases of chronic diarrhoea from whom a history of dysentery is obtained is strongly advocated; this is a wise measure both to prevent spread of infection and to facilitate diagnosis and cure. The laboratory can with certainty diagnose an amoebic infection, but in the later stages of bacillary dysentery a positive result from bacteriological examination will rarely be obtained. The instructions for the care of convalescents and the general rules as to clothing and diet will be found especially helpful.

Bilharziosis is the other tropical disease mentioned. This infection is one which will be met with occasionally in this country, though a large proportion of the cases occurred in the Australian Expeditionary Force, and their detection and care will require great vigilance in the Australian Commonwealth. The recent work on the complement deviation diagnostic test and the valuable remedy made available by Christopherson, who showed that tartar emetic given intravenously is a specific,[3] are referred to. This disease has the distinction, probably unique, of having attained a specific cure as a result of the concentrated investigation carried out as a result of the war.

Trench Fever.

Trench fever, which was so frequently described in our columns, was the "surprise" disease of the war, and was undoubtedly the cause of a large proportion of the sickness on the Western front, amounting, so the handbook states, to nearly one-fourth of the total sick wastage. The disease is almost protean in its manifestations and varieties, and the way in which these different aspects were correlated by experiment and proved to be of single origin is a striking example of successful investigation. The work of the Commissioners established by the War Office and the American Red Cross is briefly referred to, and the culminating proofs of the disease being louse-borne, and, so far as is known, not being spread in any other way.

There are three common types of the disease—the short, lasting for a week; the prolonged, with an onset resembling infection with the enteric group; and the relapsing. These types were all common in France, the proportional incidence varying in different years. Probably few if any cases resembling these early infections will now be seen, but the chronic infection is still present. It is stated that some 8 per cent. of the acute trench fever infections, instead of clearing up after a shorter or longer period, ran on into a chronic stage, characterized by debility and depression, irregularity of temperature, not necessarily rising above the normal, but showing a marked diurnal swing, tremor, nocturnal pain in the limbs, and the well-known cardiac condition known as the "effort syndrome." The latter is regarded as being due to a myocarditis of toxic origin. It is probably, therefore, one of the causes for the large number of cases of disordered action of the heart ("D.A.H."), which originated in the army, for it is pointed out that the chronic form of trench fever did not necessarily originate in an acute attack, but may have started in an insidious form with debility, pain, etc. No fresh information as to diagnosis is given, and this must therefore rest largely on a consideration of the history. Nor are we told how trench fever may be cured, for, unfortunately, no specific has been found. The essential importance of rest in bed in all cases where the temperature is oscillating is emphasized, and for the late after-effects—the effort syndrome or the neurasthenic manifestations—treatment in a pensions centre is advocated. We are glad to note the emphasis laid on the Ministry of Health's instructions as to notification and disinfestation, which are framed to prevent any spread of the disease in this country.

Gas Poisoning.

The last article in the handbook deals with gas poisoning, and will probably be read with the most general interest, because for the first time an authoritative account of the varieties of gas employed by the Germans and the resulting lesions is made available for the information of civil practitioners. However necessary secrecy may have been during the war, the effect has been to invest the whole subject with a mystery which has caused gas casualties to be regarded as cases apart, in whom unknown complications might arise, and this has been prejudicial to the recovery of patients and a frequent cause of prolonged invalidism.

A brief survey of the periods into which gas warfare fell, and a classified table of the gases employed by the enemy, furnish the reader with the essential points to remember. The action of the different groups is then described in some detail, and the late effects to be expected are recounted. In each group the similarity of the late lesion to conditions met with in civil practice is pointed out, and thus treatment on familiar lines naturally follows. Consequent on gassing with phosgene and chlorine, the majority of the late effects will be the results of bronchitis or bronchopneumonia and emphysema. One class, numerically small, must be mentioned—that is, those with polycythaemia and nocturnal dyspnoea resulting from the initial acute oxygen want experienced in the stage of pulmonary oedema, and for which an entirely satisfactory explanation is not forthcoming.

The late results of "mustard gas" are largely of the chronic bronchitic type with winter exacerbation.

The effects of being gassed are not confined to organic lesions, but also set up many functional conditions, which need to be diagnosed with care, in the interests both of the patients and the taxpayers.

It is estimated that over 50 per cent. of men drawing pensions following gassing are suffering from "functional conditions," as the following table shows:

	Per Cent.	
The Functional Group:		
Neurasthenia, etc.	30	
D.A.H.	18.6	
Debility	6	
		54.6
The Organic Group:		
Bronchitis, etc.	34.8	
Tubercle	4.5	
		39.3
Intercurrent disease		6
		99.9

That tuberculosis should figure so prominently is a matter for serious consideration. It suggests that exposure to lethal gas may be responsible for lighting up quiet foci of pre-existing disease, which is more probable than that it should actually initiate a tuberculous process. French observers have recently been commenting on the incidence of phthisis following gassing, and their experience appears to be very similar to that of the writer of this section of the handbook.

The more widely the information now made available can be disseminated and acted on, the sounder will be the treatment carried out, for in conditions met with in gassed cases it will be based on knowledge of the early conditions, and in cases of tropical disease it will be in accordance with the experience of those whose opportunities for observing treatment in all stages have been extensive.

[3] BRITISH MEDICAL JOURNAL, 1918, ii, and 1919, i.

British Medical Journal.

SATURDAY, OCTOBER 9TH, 1920.

THE MEDICAL SERVICES IN INDIA.

The position of the Indian Medical Service as the pioneer in the teaching and practice of Western medicine in India had interested the British Medical Association long before the fresh crisis brought about by the war led it to take the matter up again with the Secretary of State for India. In consequence of the representations made to him by the Association, Mr. Montagu, in a dispatch of October 11th, 1918, asked the Government of India to examine into the whole mechanism by which the medical needs of India, and especially medical education, are to be satisfied in future. The Government of India thereupon appointed a committee, with Sir Verney Lovett as president, to report on the reorganization of the medical services in India, both civil and military.

It was a body of experts, and took evidence in various parts of India. Its report is a very able state paper, clearly argued from abundance of knowledge, and written with a sense of responsibility that goes far to carry conviction. It very definitely recommends that the only satisfactory scheme in the circumstances is the unification of the medical services in India. It proposes the formation of an Indian Medical Corps, to take the place of the Indian Medical Service, doing the civil and military work now done by it, and also the work now done for the British army in India by the R.A.M.C.; this new corps would, in fact, recruit for and include the higher civil medical service of India. It would comprise commissioned officers, the military assistant and sub-assistant surgeons, with improved training and better terms of service, the Indian Army Hospital Corps, and the Indian Army Bearer Corps. The Corps would be started by transferring to it a large number of officers of the A.M.S. and R.A.M.C. under specially favourable conditions. There is, the Committee states, at the present day not only a certain degree of friction between the two services, but a considerable amount of overlapping and reduplication of effort. The plan proposed would lead to economy in personnel and hospital buildings; at present the authorized ratio of officers R.A.M.C. to strength is 4 per mille, of I.M.S. 1.28 per mille; it is considered that the military cadre of officers for the Indian Medical Corps should provide a ratio of 3 per mille of the total strength of British and Indian troops and followers in the army in India. It is laid down that the training of the R.A.M.C. and I.M.C. should be parallel, so that it would be easy for officers and men of the two corps to work together when they meet outside the boundaries of India. Further, the two services should be so alike that if in the future an Imperial Medical Service for the whole of the British Empire were established, the Indian Medical Corps would fit into it with the least possible disturbance in its constitution.

This is in brief the Lovett Committee's solution of a problem full of difficulty. It has neither shirked that difficulty, nor minimized it; it has dealt with the matter with a mastery of detail, a breadth of knowledge, and a clarity of vision that command respect. The solution offered is logical and the reasoning plain to understand, for it is clear that the unification proposed would eliminate much waste, overlapping, jealousy, and schism. It has failed to win the approval of the Army. It is perhaps for this reason that its report, though it has been in the hands of the Government since April, 1919, was only issued on the same day last week as the report of the Esher Committee on the administration and organization of the army in India. That committee also was impressed by the desirability of unification, and admits that the Lovett report puts forward the only feasible scheme for a unified military and civil medical service; it would be reasonable to expect such a statement to be followed by an endorsement of the scheme, but it is not. The Esher Committee is "unable to support" that scheme because it would, after the first selection had been made, permanently exclude the R.A.M.C. from India. This, it is considered, would seriously diminish its opportunities for gaining clinical experience and be disadvantageous to British troops in India. These arguments are not very impressive so far as the welfare of British troops is concerned; administrative difficulties must always arise during a period when alterations are being made in the constitution of a Government service, but they could, in this instance, be overcome with comparative ease.

The British Medical Association will, we do not doubt, look at the proposals from the broadest point of view, being interested in the matter as it affects the progress of Western medicine in India and the welfare of the British army and civil services in that country. The really important thing is to get the best possible medical service for India, a service which will attract the right class of man and will give the Indian Empire the fullest possible value—military, civil, and educational. There must be no question of rival interests of the I.M.S. and of the R.A.M.C., the welfare of the empire must stand first. The opinions conveyed to the Secretary of State by the British Medical Association in the past have been formed after full inquiry, and have been pressed in measured terms. There is now, we hope, a great chance of getting the whole question settled in a large way, and silencing for ever petty jealousies that have disfigured the past. The Lovett scheme would go a long way towards the attainment of the desired end. There are objections to it, but there are objections to every plan, even the Esher Committee's plan of doing nothing. The Lovett scheme has the conspicuous merit also of showing how the legitimate aspirations of Indians for a share in the service appointments may be met under conditions which would eventually allow them to attain to a large measure of participation in both executive and administrative appointments.

HEPATIC CIRRHOSIS OF BILIARY ORIGIN.

The existence of hypertrophic cirrhosis of the liver starting from the bile ducts as a disease distinct from the ordinary cirrhosis spreading out from the branches of the portal vein has been much discussed since it was first propounded in detail by Victor Hanot in 1875, and opinion, at any rate among English-speaking medical men, may with fair accuracy be described as one of philosophic doubt. Probably Fiessinger's clinical classification of cirrhosis into ascitogenic and icterogenic (see p. 550) would be generally admitted; but it has been urged that the morbid lesions are not so constantly different in the two groups as to justify the recognition of hypertrophic biliary cirrhosis as a real disease rather than as a symptom-group. On the other hand, it has been suggested that this anatomical confusion can be explained by a morbid

change which originating in the bile ducts subsequently becomes complicated and thus obscured by fibrosis of the portal type, due to poisons conveyed from the enlarged spleen; so that by the time the disease proves fatal, it is difficult to unravel the two processes. It might also be pointed cut that such a sequence of events occurs in renal disease, a nephritis primarily tubal, and so corresponding to hypertrophic biliary cirrhosis, eventually showing some of the changes characteristic of the arteriosclerotic granular kidney, which may be regarded as homologous with portal cirrhosis.

A paper on "the biliary factor in liver lesions," based on a series of ingenious experiments, by Drs. Rous and Larimore,[1] of the Rockefeller Institute for Medical Research, throws considerable light on the difficult problem of biliary cirrhosis. Rabbits were employed, as in them the liver consists of two separate masses, a smaller one or "lobe mass" and the main liver, each with its own bile ducts and blood vessels, and so is singularly well fitted for experiments involving their ligature. Further, ligature of the ducts sets up changes much more rapidly in rabbits than in cats, and than does biliary obstruction in man; in addition the complication of infection can be readily eliminated. The following series of experiments were carried out: Ligature of the common bile duct, ligature of the duct to the main liver, ligature of the bile duct and in addition of the portal vein to the main liver, ligature of the bile ducts to the small lobe mass and of the portal vein to the main liver so as to convey all the portal blood to the lobe mass, and repetition of the last procedure with ligature of the bile duct to the main liver. Ligature of the common bile duct was followed by great dilatation of all the ducts, pericholangitis, and a cirrhosis at once stellar, unilobular, and intralobular, the liver becoming hobnailed in three weeks. There is, therefore, hepatic injury throughout the whole course of the biliary tract, from the main duct to the intralobular canaliculi inclusive; and, as no human lesion exactly resembles this, it was thought that more insight into human biliary cirrhosis would be obtained by localizing the biliary stasis to different levels of the biliary tract.

This was accomplished in the other series of experiments. Ligature of the bile duct to the main liver caused unilobular cirrhosis with some pericholangitic fibrosis and dilatation of the larger ducts and atrophy of the liver cells, the tissue eventually becoming comparatively bloodless. The cirrhosis, which was due to the irritation of bile escaping from the ruptured fine ducts, and the distended state of the bile passages probably interfered with the portal blood supply, and so caused atrophy of the hepatic cells and diminished secretion of bile. It is noteworthy that the small lobe mass is able to secrete all the bile and prevent any jaundice; this is contrary to the view commonly held that in man obstruction of one hepatic duct will cause jaundice, and is described as "the factor of safety in bile elimination." The importance of the deflection of the portal blood from the area of biliary stasis was further proved by experimental ligature of the portal vein and of the bile ducts to the main liver, which then underwent a pure unilobular cirrhosis due to the irritating effect of bile escaping continually through the walls of the fine bile ducts in Glisson's capsule without their rupture; the large bile ducts were but slightly dilated, ligature of the portal branch to this area having reduced the secretion and pressure of bile. In this way the biliary stasis was limited to the level of the fine bile ducts in Glisson's capsule between the lobules, and gave rise to a pure unilobular cirrhosis, such as is characteristic of uncomplicated cases of Hanot's hypertrophic biliary cirrhosis. In another series of rabbits, by ligaturing the bile ducts to the lobar mass, and the portal vein to the main liver, thus diverting all the portal blood into the area of biliary stasis, and keeping up the secretion of bile, a diffuse intralobular cirrhosis was produced in the lobar mass. There was remarkably little dilatation of the large bile ducts to the lobe, and still less of its branches, the brunt of the biliary stasis falling on the fine ducts of Glisson's capsule, and most of all on the canaliculi within the lobules, as was shown by the bile thrombi and numerous necroses of the liver cells. This diffuse intralobular fibrosis, due to the irritation of bile at the level of the intralobular canaliculi, resembles that present in the form of biliary cirrhosis so fatal to infants in parts of India.

These experimental observations strongly support the existence of biliary cirrhosis, and in addition bring out the difference in the lesions caused by biliary stasis at various levels of the biliary tract, and the importance of the interrelations between biliary stasis and secretion on the one hand and the supply of portal blood on the other. It must further be remembered that these experimental results were all proved to be independent of infection, whereas a low grade infection very probably plays a part in human biliary cirrhosis, and may thereby induce some changes additional to those produced by aseptic biliary stasis. This point is also referred to in the account of the case reported on p. 544 by Sir Humphry Rolleston and Dr. Stanley Wyard.

[1] Peyton Rous and L. D. Larimore: *Journ. Exper. Med.*, Baltimore, 1920, xxxii, 249-272.

MOORFIELDS HOSPITAL.

The Royal London Ophthalmic Hospital, better known as Moorfields Eye Hospital, or more commonly as Moorfields, is one of the most famous medical institutions in Great Britain. It was founded in Charterhouse Square in 1804; it was removed to Moorfields in 1821, and there remained until 1899, when the new building in City Road which it now occupies was taken into use. It claims to be the parent of all similar institutions throughout the English-speaking world. It has always been in fact, if not in name, a post-graduate school. In 1811 two young graduates of the College of Physicians and Surgeons in New York, Dr. Edward Delafield and Dr. J. Kearney Rodgers, studied at the hospital under Dr. Farre and Mr. Benjamin Travers, and when they returned to their own country in 1818 set about establishing a similar institution in America. Two years later (in 1820) the New York Eye and Ear Infirmary commenced its great and beneficent work. In 1816 Dr. Edward Reynolds travelled from Boston to London to attend the practice of the hospital and the lectures given by Mr. Travers and Sir William Lawrence. When Dr. Reynolds returned home he found his father blind from cataract in both eyes; fortified by his recent experience in London he operated, with complete success. The operation for cataract had not, it is said, been performed in Boston before. Not only did the result establish Dr. Reynolds's reputation, but it led to the foundation, in 1824, of the Massachusetts Charitable Eye and Ear Infirmary. The facts with regard to Canada are somewhat similar although the dates are much later. At the time when Reynolds and his colleagues from New York were working at the hospital there was also attending Mr. R. Richardson, who entered the medical service of the East India Company; when, in 1819, the directors resolved to establish an eye hospital in Madras, he was appointed its first superintendent. The Madras Eye Infirmary—now known as the Madras Government Ophthalmic Hospital—is one of the most important institutions of its kind in the

world. Its foundation was followed in 1824 by the establishment of eye hospitals in Calcutta and Bombay, each under the direction of surgeons who had studied at Moorfields. The teaching and instruction to be obtained at the hospital attracts not only British doctors going to India or on leave from that country, but also native Indian doctors. The teaching is open to women as well as men, and a number of women doctors, both British and Indian, have availed themselves of it. It is true to say that much of the great progress in ophthalmology since the hospital was established has been effected by the researches of the many distinguished surgeons who have served on its staff. Many more subjects are ripe for investigation in many directions, and will be of benefit not to one class, one community, or one nationality, but to the whole human race. The hospital therefore makes an appeal to a very wide public, including those who have benefited, directly or indirectly, from the teaching given there. It is asking its old pupils to help it now by using their influence in favour of a fund for the extension of its laboratory accommodation for clinical and pathological research, and to supply adequately paid assistants to the honorary staff, so that they may be liberated from much routine work and enabled to devote more of their time to clinical instruction and research. It is hoped also to obtain funds to provide adequate accommodation for nurses, not only for those on the regular staff, but also for those who go to the hospital to obtain a special training in the nursing of diseases of the eye.

THE MICRO-ORGANISM OF TYPHUS.

NICOLLE showed in 1909 that monkeys could be infected with typhus fever by the injection of blood from a patient suffering from that disease, and Ricketts and Wilder, among others, inoculated monkeys with the expressed contents or the faeces of infected lice. Despite much experimental work, however, there has been no general agreement as to the nature of the virus. Rocha Lima and others regard the so-called *Rickettsia prowazeki* as the cause; specific bacilli or cocci have been reported by Plotz, Zeiss, Wilson, Danielopolu, and others; some have attributed the disease to a spirochaete or to a filtrable virus. In a preliminary report from the Typhus Research Commission of the League of Red Cross Societies to Poland, Wolbach, Todd, and Palfrey[1] recount a series of experiments made with the purpose of determining the nature and specificity of the micro-organisms acquired by lice fed on typhus patients. Thirteen attempts to cultivate the organisms described by Plotz, and named by him *Bacillus typhi exanthematici*, were unsuccessful. Autopsies were made on 39 cases of clinically well-established typhus; in 21 cases dying before convalescence, the constant gross findings were rash, enlarged spleen, and engorgement of the smaller vessels of the central nervous system. Secondary bronchitis and bronchopneumonia were present in 37, and in 8 cases were the immediate cause of death. The characteristic microscopical lesions were seen in the smaller blood vessels, most often those of the skin and of the central nervous system. Proliferation of the endothelial cells was followed by degeneration and necrosis, leading in the larger vessels to thrombus formations, and in the smaller to destruction of continuity, followed by extravasation of blood. A perivascular accumulation of large mononuclear (endothelial) cells and of polymorphonuclear leucocytes occurred earlier in the disease, and was most pronounced about the blood vessels supplying the sweat glands. In the endothelial cells of thrombosed vessels a micro-organism was found resembling that described in Rocky Mountain spotted fever[2] and in the typhus fever of Mexico; it was seen in thirteen samples of skin excised from living patients, and in twenty-two samples of tissue obtained at autopsy. The most easily demonstrable form of the organism occurred in clumps composed of pairs of slightly elongated bodies, 1 to 1.5 μ in length, with tapering ends, and surrounded by an unstained area. A second and rarer form was a minute paired granule, filling the endothelial cells while they were still *in situ*. What was possibly a third form was found in minute granules, just within the limit of visibility, which were demonstrable in certain peculiar swollen and vacuolated endothelial cells of the skin excised during life and of the tissues examined at autopsy. Typhus was transmitted to guinea-pigs by inoculation with infected lice; the gross changes produced were splenomegaly and slight enlargement of the inguinal and axillary lymph nodes. In fourteen of the infected guinea-pigs the most constant and obvious lesions were in the brain; they resembled closely those described in human subjects. The testis and epididymis often showed a few characteristic vascular lesions; in the cerebral vessels the larger forms of the organism as seen in man could be demonstrated. Lice were taken to Warsaw from North America and from Great Britain. The American stock remained free from micro-organisms throughout the investigation; certain of the British lice had a Gram-negative diplococcus in the genital tract, but no intracellular organisms were detected. Large numbers of intracellular organisms appeared in lice fed for one hour, twice daily, during a fortnight or more, on typhus patients who had had the disease for ten days or less. The organisms correspond to those described by da Rocha Lima as *Rickettsia prowazeki*.[3] Exceedingly pleomorphic, they varied in shape from a minute paired body to a bacilliform organism several microns in length; both forms occurred in chains. In some of the infected lice vast numbers were present; every epithelial cell lining the gut was distended by myriads of organisms, and these bloated cells could be seen with a $\frac{1}{2}$ in. objective.

[1] *Internat. Journ. of Public Health*, September, 1920.

[2] BRITISH MEDICAL JOURNAL, September 25th, 1920, p. 485.

[3] *Deut. med. Woch.*, July 3rd, 1919.

THE HISTORY OF SCIENCE.

LAST spring a beginning was made at University College, London, with the foundation of a school of the history of science. Dr. A. Wolf, Reader in Logic, then made a first attempt at some organized presentation of the history of scientific ideas by arranging for a series of lectures; the course was inaugurated by Dr. Charles Singer last May in a lecture in which Greek science and modern science were compared and contrasted. This autumn much fuller arrangements have been made, and a series of courses of lectures will be given. The field to be covered is wide, ranging from Egyptian science to the most important developments of physical science in the nineteenth century, and from biology to mathematics in the eighteenth century. An introductory public lecture will be given on Thursday, October 7th, at 5 p.m., by Professor Sir William H. Bragg, F.R.S., and on October 13th Dr. Wolf will begin an introductory course of lectures on the general history and development of science; this course will be illustrated by lantern slides, and visits will be made to museums. On October 12th, at 5.15 p.m., Dr. Charles Singer will begin a course of twelve lectures on the history of the biological and medical sciences from early times till the eighteenth century. Dr. Singer's intention is to make his course a history of medical science, for down to a certain date the biological sciences are inseparable from medicine; he will omit all discussion of social phenomena and personalities. The history of the biological sciences since the eighteenth century will be dealt with by Professor J. B. Hill, F.R.S., in a course of six lectures, beginning next May. The full programme of all the courses, with particulars as to fees, can be obtained by sending a stamped envelope to Dr. W. W. Seton, Secretary of the College, Gower Street, W.C.1.

"THE RIGHT TO STRIKE."

Mr. Ernest Hutchinson's four-act drama, *The Right to Strike*, at the Garrick Theatre, is frankly intended to be "a play of to-day." It raises the issue of a counter-strike by doctors in the face of a strike *à outrance* by the workmen of a local railway company serving an isolated town in Lancashire. The medical men of Valleyhead, aghast at the murder of one of their number, undertake a rigorous medical boycott of the railwaymen and their families. The murdered man is Dr. Miller the younger, just demobilized from the R.A.M.C., and returning home with his bride in the expectation of peace and comfort after the war. He is killed by the strikers while acting as an emergency transport driver. His great friend, Dr. Wrigley, the principal surgeon of the town, is the leading spirit first of the transport service and then of the doctors' strike. Nearly all the protagonists in this local tragedy are well known to one another from youth up, and two of the acts take place in the board room at the Valleyhead Infirmary. From the dramatic and topical standpoints the problem is highly interesting, though every doctor knows that a thorough-going medical reprisal of this kind would never really happen. The medical tradition is too strong, even with such extreme provocation as the playwright here deliberately introduces. Indeed, through all the action of the drama this is plainly meant to be the feeling of Dr. Miller the elder—a well-drawn character, portrayed with fine sympathy, restraint, and sincerity by a most accomplished actor. The leader of the railwaymen has a young wife who is expecting her first child, and news of the gravity of her condition is brought to him at the height of the struggle, during a conference between the various parties under the chairmanship of the local M.P. This meeting of leaders of the opposing camps is attended by a comic person described in the programme as "Mr. James, Solicitor to Medical Association." In real life one would expect to find a medical official on the spot at such a moment; but they do things differently in stageland, and a lawyer is sent down from London to try to settle the dispute. (This gentleman seems, by the way, to have very wide powers, for we learn in the last act that he has suspended the obdurate Wrigley from the *Medical Register*!) The father of the murdered man withdraws from the medical embargo and resumes his professional care of the young woman. The case, however, turns out to be beyond his powers, and the patient's life can only be saved if Wrigley will operate. By this time the strike is over and the trains are running again. Most of the characters reassemble in the sitting-room of the railwayman's cottage in the small hours of the morning. The patient is at death's door in the next room; everything is ready for the operation if only Wrigley can be found and persuaded to perform it. He comes at length, but he will not operate, holding that duty to the murdered friend forbids him to save the wife of a man who cared nothing for the lives of men, women, and children in a community paralysed by his comrades' strike. Of course the doctor gives way in the end, and the curtain falls as he is taking off his coat. And so the audience leaves with mingled feelings as to the rights and wrongs of the trouble, but confident at least of a happy issue for the railwayman's family. It should be added that the acting throughout is excellent.

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.

The twenty-first annual general meeting of the National Association for the Prevention of Tuberculosis takes place on October 8th, during the conference at Liverpool. In the annual report the honorary secretary, Dr. J. J. Perkins, gives a list of 81 public lectures delivered by officials of the society and of 24 leaflets, cards, and so forth published under its auspices. A new branch has been formed for the county of Essex, and the syllabus has been drawn up of a training scheme in tuberculosis for voluntary workers. The council has been seriously hampered for want of funds; neither the Ministry of Health nor the London County Council has been able to allocate grants, and as the expenditure exceeds the income by a thousand pounds it is possible that the work will have to be curtailed. The report contains further information regarding the association's scheme for establishing a training colony for discharged sailors and soldiers at Burrow Hill, in Surrey. Water has been laid on, roads have been made, and the construction of the farmsteading has been completed. Of £50,000 asked for in the appeal of 1917 a total of £36,568 had been received on July 31st, 1920. Terms have been arranged with the Ministry of Health for the extension of the training colony scheme by amalgamation with the Brompton Hospital sanatorium at Frimley. The Minister of Health has agreed to meet the total cost of increased sanatorium accommodation, provided that it is available for tuberculous ex-service men from any part of the country, and that the plans meet with the approval of the Ministry. The sanatorium authorities are to have the option of taking over the buildings and equipment thus provided at any time within a period of five years in consideration of a payment—subject to certain modifications—equivalent to two-fifths of the then value of the property. It is hoped that before the end of the year a training colony, for the provision of which the association is working in conjunction with the Royal Victoria Hospital Tuberculosis Trust, will shortly be opened at Southfield, near Edinburgh. The object of the society is the prevention of tuberculosis; the methods employed are: (1) the education of public opinion and the stimulation of individual initiative; (2) the influencing of Parliament and other public bodies; (3) the establishment of local branches. This year's conference is being held in St. George's Hall, Liverpool, during the last three days of the present week.

THE LONDON MEDICAL EXHIBITION.

The tenth London Medical Exhibition has been open during the current week at the Central Hall, Westminster. It is the second of these exhibitions to be held since the close of the war, and is much larger than its predecessor, occupying two floors instead of one, and displaying the products of about ninety firms. The inclusion of a dental section, to which several manufacturers of dental outfits and dental preparations contributed, was a new departure. To a large extent the exhibition was a reproduction for the benefit of London medical men of the very successful exhibition of drugs and surgical appliances held at Cambridge at the end of June, on the occasion of the annual meeting of the British Medical Association. If anything, the show of fine chemicals was larger on this more recent occasion, and some of the manufacturers along this line aimed not only at an attractive but at an educative display. One well-known house, for example, showed a large frame containing a set of tubes with connecting diagrams and explanatory text to illustrate the derivatives and alkaloids of opium. On the same stand was a mountain of sodium salicylate—a beautiful exhibit, and, like many other things of the same order, a clear tribute to the British chemist. Liquid paraffin, in preparations which could be taken by the most fastidious, was a feature at several stands. The visitor was enabled also to see the most recent advances in organotherapy, and here again the processes of manufacture were illustrated, from the raw glands to the finished products. Perhaps the side of medical work least represented was medical electricity, but a fair amount of apparatus was on view, including portable *x*-ray equipments worked from one switch. Radiographs taken with a special *x*-ray film, which enables single-flash exposures to be made even when two intensifying screens are used, formed another exhibit of interest. Then there was a

great range of surgical instruments, orthopaedic appliances, such things as elastic hosiery, sanitary wools, toilet preparations, surgical soaps, and various foods whose names are household words. A number of bookstalls with many interesting publications were scattered about the exhibition; but it is evident that if these exhibitions go on increasing their area some system of sectioning will have to be devised, for to have artificial limbs, tonic foods, laboratory apparatus, and the waters of English spas all pressing upon his attention within almost the same square yard is bewildering to the visitor and not quite fair to the exhibits.

MEDICAL EDUCATION AT ST. MARY'S HOSPITAL.

THE authorities of St. Mary's Hospital Medical School have issued an appeal for public subscription of at least £150,000. Of this sum, £30,000 is required for the rebuilding of the school, and £40,000 for the construction of a new block providing accommodation for a new pathological institute, and for laboratories for certain special subjects. At present the pathological institute, with its seven departments, is housed, not in modern well-equipped laboratories, but in converted wards originally intended for midwifery. Lack of funds, besides causing the pathological work to be conducted in conditions of considerable difficulty, has impeded the provision of in-patient clinical instruction in midwifery at a time when this is urgently required. An appeal is also made for £20,000 to endow a chair of hygiene, public health, and preventive medicine, and for an equal sum to endow a chair of pharmacology. The facts are made public that the teacher of preventive medicine at St. Mary's is paid only £10 a year; that there are not half a dozen whole-time teachers of pharmacology in this country; and that there is in London only one complete pharmacological institute—and that is dissociated from any hospital. It is from the heads of industry that aid is chiefly sought for the endowment of the chair in industrial medicine. The detection and prevention of "dope" and T.N.T. industrial poisoning during the war, and Dr. Llewellyn's researches on miners' nystagmus are given as instances of the value of industrial medicine. Good may ensue, both to the employers and employed, from investigation of the problems connected with fatigue, efficiency, and output, with occupational diseases, and with the psychology of industrial unrest; already in America there are departments of industrial medicine in connexion with six medical schools or universities. The appeal committee has issued a booklet in which are pointed out both the national importance of medical education, and its present handicaps; the extension and alterations which are proposed in the teaching of St. Mary's are summarized in an appeal which is "not based on sentiment but on grounds of investigation and education." Contributions are also asked for towards a fund of £20,000 with which to endow four research fellowships, each yielding £250 yearly, two in medicine and two in surgery.

THE FINSEN INSTITUTE IN COPENHAGEN.

IN the annual report for 1919 the directors of the Finsen Institute in Copenhagen give a comprehensive survey of its multifarious activities. Altogether 3,957 patients attended the Institute, but only 1,587 were new-comers. The number of old cases of lupus carried over from earlier years is a sad commentary on the refractoriness of this disease even to the most modern treatment; of 507 cases of lupus vulgaris treated in 1919, only 131 were new-comers in 1919. It is, however, pointed out that these chronic cases largely represent the failure on the part of practitioners to send their patients to the Institute early in the disease. The adoption of universal light baths, in addition to strictly local exposures, is regarded as a distinct advance, both the duration of treatment and the frequency of relapses being considerably reduced. But some years must still pass before the influence of this factor can be demonstrated by statistics. This use of universal actino-therapy applies to surgical tuberculosis as well as to lupus vulgaris, and for the purpose of universal exposures the quartz-mercury lamp has been almost completely superseded by the carbon arc lamp. Only when the subjects of laryngeal tuberculosis cannot tolerate the heat generated by the carbon arc lamp is the quartz-mercury lamp found more satisfactory. The *x* rays were used on 1,365 patients, partly in conjunction with light baths for various forms of tuberculosis, and partly as the principal remedy in various diseases of the skin. Altogether 98 patients were treated with radium, but the report does not say with what result. Carbon dioxide snow continues to be used with satisfactory results in various diseases of the skin, and altogether 166 patients received this treatment. Diathermy has also been introduced, but no opinion is expressed as to the value attached to it at the Institute. The galvano-cautery is occasionally used when electrolysis, diathermy, or operation is impracticable. In the oto-laryngological department Reyn's electrolysis is still practised when the localization or the extent of the disease contraindicates operation, and it is invariably practised when the disease is situated on the septum nasi and in certain parts of the mouth, provided the patient's general condition is suitable. In this department the introduction of universal light baths in the treatment of chronic bone disease and tuberculosis of the larynx is hailed as an important advance, and even in severe cases of laryngeal tuberculosis universal exposures to the carbon arc lamp have been found to banish pain and dysphagia.

WE regret to record the death of Dr. William Murray, consulting physician to the Newcastle-on-Tyne Hospital for Sick Children. An obituary notice will appear in an early issue.

THE Minister of Health has appointed a Committee, with Mr. Neville Chamberlain, M.P., as chairman, to inquire into the practice of living-in on canal boats in England and Wales, and to report whether any alteration in the practice is desirable. The Committee has no medical member.

The Minister of Health has appointed to be a medical officer of the Ministry, Dr. Alexander Macphail, formally Professor of Anatomy in St. Mungo's College, Glasgow, Lecturer in Anatomy at St. Bartholomew's Hospital, and Secretary of the Anatomical Supplies Committee of Great Britain. His first duties in the Ministry of Health will relate to the administration of the Anatomy Acts, which has been transferred to the Ministry from the Home Office.

PRESENTATION TO DR. J. A. MACDONALD.

THE following further subscriptions have been received from September 21st to October 2nd, in response to the appeal published in the JOURNAL of July 24th (p. 129), towards a presentation to Dr. J. A. Macdonald on the occasion of his retirement from the office of Chairman of Council of the British Medical Association which he had held for ten years. Subscriptions of any amount not exceeding five guineas should be made payable to "The Macdonald Presentation," and sent to the Medical Secretary, British Medical Association, 429, Strand, London, W.C.2.

EIGHTH LIST OF SUBSCRIBERS.

	£	s.	d.
Brought forward from last list of subscribers ...730	1	0	
Charles, Dr. J. R., Clifton, Bristol	2	2	0
Douglas, Dr. W., London.	2	2	0
Frier, Dr. C., Grantham...	1	1	0
Goodbody, Dr. F. W., London	2	2	0
Haig, Dr. William, D.S.O., Crieff	0	10	6
Jacob, Dr. H. W., Great Malvern	1	1	0
Pollock, Dr. G., London ...	1	1	0
	£740	0	6

WESTERN MEDICINE IN INDIA.

PROPOSED INDIAN MEDICAL CORPS.

Two reports of great consequence to the Indian Medical Service and to the progress of Western medicine in India were published at the end of last week. One is the report of the Medical Services Committee appointed by the Government of India in January, 1919, under the presidency of Sir Verney Lovett, to examine the question of the reorganization of the medical services in India, both civil and military. The other is the report of the Committee appointed, later in the same year, under the presidency of Lord Esher, by the Secretary of State to inquire into the administration and organization of the army in India.

THE LOVETT REPORT.

The Lovett Committee met in Delhi, and visited Lucknow, Patna, Calcutta, Madras and Bombay, and at each place examined witnesses, including representatives of the I.M.S., the R.A.M.C., the Indian Medical Department, independent private practitioners, civil assistant and subassistant surgeons, medical missionaries, and some non-official Indian gentlemen not connected with the medical profession. The Committee framed a scheme for a unified medical service for the British and Indian armies, and for the higher civil medical appointments in India. They hoped it would be accepted by the War Office, since if a unified service be not introduced many present difficulties must continue.

The report, after a historical introduction, points out that the war dislocated the domestic and financial arrangements of many I.M.S. officers, and quotes the statement made by Colonel Elliot to the Secretary of State on behalf of the British Medical Association, to the effect that many letters received showed the unfortunate financial position of the writers, inasmuch as they had been living on their savings and on other sources of private income for several years during the war or were heavily in debt. He stated also that complaints were made that the services of I.M.S. officers had not been used to the best advantage, and that they had been constantly superseded by officers junior to them in other branches of the medical organization. The Secretary of State and the Government of India took steps in the hope of remedying these grievances; staff pay in the field was improved, and promotion accelerated so as to prevent supersession of I.M.S. officers by R.A.M.C. officers.

In March, 1918, Indian members of the Legislative Council moved for the constitution of a civil medical service, wholly independent of the Indian army, and in October, 1918, after further discussion with the British Medical Association, Mr. Montagu asked the Government of India to inquire into the whole mechanism by which the medical needs of India, and especially medical education, are to be satisfied in future. The appointment of the Lovett Commission was the result. The Committee consisted largely of experts, and included two Indian officers I.M.S. and a civil practitioner.

Proposed Indian Medical Corps.

On the main problem the Committee expresses the clear opinion that if a good class of British candidate is to be attracted to the medical service in India, that service must partake of the nature of a mixed career—military, civil, professorial, sanitary, and research—and must offer the varied opportunities which will appeal to medical men of action as well as to men skilled in the different branches of the medical profession. The conclusion is that one Indian Medical Service should "compete in London for candidates who desire a career of mixed opportunities, military and civil." The Committee recommends the formation of an Indian Medical Corps, which would take the place of the Indian Medical Service, and, in addition, do the work now done by the R.A.M.C. in India. Reference is made to inconveniences and friction which arose between officers I.M.S. and officers R.A.M.C. in India, and the opinion is strongly expressed that the present is a suitable time to attempt to remove these inconveniences and sources of friction. This could be achieved within three or four years, the period within which the Committee considers the new Indian Medical Corps would have become sufficiently organized to take over the whole of the military medical work in India, and at the same time be able to assist provincial medical services. It is also pointed out that if in the future an Imperial Medical Service for the whole of the British Empire should be established, the Indian Medical Corps would fit into it with the least possible disturbance or modification in its constitution.

The new Corps should have its own leave and casualty reserve of 25 per cent. and study reserve of 4 per cent., besides a war reserve calculated on the numbers necessary to meet the medical requirements of the field army of India on mobilization. At the present day the cadre of the R.A.M.C. is a ratio of 4 per mille of the total strength of British troops, and of the I.M.S. in military employ 1.28 per mille for Indian troops. It is recommended that the cadre for the new Indian Medical Corps should be calculated at the rate of 3 per mille of the total strength of the British troops and followers in the army in India. It is considered that the formation of one Indian Medical Corps to take over the care of both British and Indian troops will lead to economy not only in personnel but also in hospital buildings. Proposals are made also for the improvement of the status of assistant surgeons; this would render it possible to reduce the ratio of commissioned officers in proportion to the extent to which such officers were replaced by assistant surgeons, who, it is proposed, should in future be called assistant medical officers. The Committee considered but rejected the proposal to meet the situation by making over the care of the entire army in India to the R.A.M.C., making the I.M.S. a purely civil service.

The Committee again and again expresses its strong opinion that unification is the only satisfactory policy, and more than once quotes the words used by the deputation from the British Medical Association to the Secretary of State, and adopted by him, that the medical service is "the pivot upon which all other imperial services in India depend." The Committee considers that Indian medical talent should be attracted, and proposes increased facilities for such candidates in the hope that the Corps may contain a strong and high-class Indian element, and that the Governments of the various provinces may, with the help of officers from that Corps, be able to develop their own medical administration, and appoint their own officers as the occasion arises.

Constitution of Proposed New Corps.

The new Corps, it is recommended, should include commissioned officers, military assistant surgeons and subassistant surgeons, the Army Hospital Corps, the Army Bearer Corps, and other hospital establishments. As the cadre of the Indian Corps would be much larger on the military side of the I.M.S., the Committee judges it of great importance that the increase should not be confined to the junior ranks, but that a large number of officers of the Army Medical Service and the R.A.M.C. should transfer to the new Corps on equitable terms.

The Corps should have its own dépôt and school of instruction, and junior officers shortly after their arrival in India should be attached to a large civil hospital or school of tropical medicine for practical instruction in tropical diseases. In order to secure a sufficiency of candidates for the new Corps a system of optional retirement on gratuity before pension is earned should be instituted on the lines of the plans already existing in the R.A.M.C. and Medical Department R.N.

The Committee recommended that admission to the Corps should be through the portal of a single examination held in London twice a year, selected Indian students from the five Indian universities being assisted by scholarships to compete in this examination; at the beginning admission must be by transfer and nomination. The Committee also recommended that special opportunities should be provided for research work in scientific medicine, and that certain posts in the sanitary and other departments should be reserved to officers of the new Corps. Such officers would be debarred from private practice and should receive instead monthly allowances; officers holding clinical posts should be allowed consulting and operating practice in their own subjects, as should also chemical examiners and analysts.

The Esher Report.

The Committee over which Lord Esher presided was appointed at the end of 1919 to inquire into the administration and organization of the army in India, including its relation with the War Office and the India Office, and of these two offices to one another. The report bears the final date June 22nd, 1920. The general principle governing the representations of the Committee is expressed in the following paragraph:

> India has now been admitted into partnership with the Empire, and the Indian Army has fought, alongside troops from other parts of the Empire, in every theatre of war. Its responsibilities have thus been greatly widened, and it can no longer be regarded as a local force whose sphere of activity is limited to India and the surrounding frontier territories. It must rather be treated as a part of an Imperial Army, ready to serve in any part of the world. It follows that the organization of its auxiliary services should, if confusion is to be avoided, conform closely to that of the rest of the forces of the Empire.

In consequence it is recommended that the Commander-in-Chief in India should be the sole military adviser of the Government in India, and that the Secretary in the Military Department of the India Office should be a deputy chief of the Imperial General Staff, and, acting under the Chief of the Imperial General Staff, be the sole military adviser of the Secretary of State. It is desired to establish closer relations between the British and Indian armies, and proposals for the amalgamation of various services are put forward, but it is thought that the amalgamation of the R.A.M.C. and I.M.S. would present great difficulties.

The I.M.S. and the R.A.M.C. in India.

It is pointed out that the term "unification" is used in different senses; for the Government of India, the Lovett Committee, and the Secretary of State it meant the unification of the superior military and civil medical services, but for the military authorities it meant the unification of the two military medical services only. Three schemes considered by the Committee are summarized as follows:

(1) That of the Verney Lovett Committee, viz., the elimination of the Royal Army Medical Corps from India, and the creation of a unified Indian Medical Corps, to serve both the army and the civil population.

(2) The proposal to entrust the medical charge of the Indian Army, as well as of the British Army, to the Royal Army Medical Corps, thus making the Indian Medical Service a purely civil medical service.

(3) The proposal to retain both the Royal Army Medical Corps and the Indian Medical Service, but to split the latter up into two separate services, the one serving the Indian Army and the other the civil population.

The Esher Committee expressed the opinion that the Lovett report put forward the only feasible scheme for a united military and civil service, but in the same paragraph rejected it on the ground that after the first selection had been made it would permanently exclude the R.A.M.C. from India; this, it is considered, would be disadvantageous both to the British troops and the officers of the R.A.M.C., depriving them of the wide field of medical experience that India affords. It is also contended that the proposed Indian Medical Corps would for some years be unable to provide the full establishment of officers required for British as well as for Indian troops, because it does not now attract candidates, and in the opinion of the Esher Committee would not obtain any large number of volunteers from the R.A.M.C. This is, of course, a matter of opinion, and it is equally open to others to believe that many R.A.M.C. officers would be willing to transfer provided suitable conditions were offered.

If the proposal to entrust the medical charge of the Indian as well as of the British army to the R.A.M.C. were carried out it would, the Committee estimates, involve an increase of the number of officers R.A.M.C. in India to a thousand, and in order to encourage them to gain knowledge of Indian languages and conditions it would be necessary to allow a certain proportion to elect for continuous service, or at least successive tours. It is noted also that an essential condition of this scheme would be to open the R.A.M.C. to Indians. The Committee does not recommend the scheme, the main reason given being that complete separation of the civil from the military medical service would lead to undesirable consequences—among others, the loss of a reserve of three or four hundred medical officers, with military training, whom the local governments would otherwise be in a position to furnish from the civil side in an emergency.

Separate Civil I.M.S. Condemned.

The proposal to form a separate civil medical service is condemned for various reasons, including increased cost, the risk that a purely civil medical service would become provincial and thereby deteriorate in quality, and the loss of efficiency on a purely medical military side, owing to lack of the wide experience afforded by civil practice. Therefore, the opinion is expressed that it would be increasingly difficult to obtain a reasonable proportion of well qualified Europeans in such a service, though a strong European element is essential:

> (*a*) For medical attendance on the European servants of Government and their families, who have been led to expect that they will be treated by men of their own race, and whose expectations it is particularly desirable not to disappoint at the present time.
>
> (*b*) For the maintenance of Western standards of research, efficiency and discipline in the civil medical services of Government.

It is added that both the Government of India and local governments are opposed to the creation of a separate civil medical service, and the Committee agrees that it would be unwise to break up a service which has such fine traditions and has rendered such services to India as the Indian Medical Service.

Recommendations.

The Esher Committee, while rejecting the plan of the Lovett Committee, has nothing to put in its place. Having started, the members state, with the hope of devising a scheme for the amalgamation of the two services (R.A.M.C. and I.M.S.) "we have been reluctantly forced to the conclusion that such amalgamation is impracticable, at least in present conditions." While aiming at closer co-operation, assimilation of conditions, and interchange of officers between other branches of the British and Indian armies, the Committee did not think it desirable to aim at complete unification or amalgamation. It therefore sees no objection to the continuance of separate medical services for the two armies, but desires to eliminate friction and jealousy and to secure as nearly as possible uniformity of training of methods and of ideals. The Committee considers that the following proposals, if accepted, will maintain the Indian Medical Service in its position as the premier civil medical service in India:

(1) There should be a joint examination, as was formerly the case, for both services in medicine and surgery, the subjects common to both. Candidates for the Indian Medical Service should take in addition the extra subjects, indicated in the syllabus to the Verney Lovett report, which are considered necessary for that service.

(2) The commissions for successful candidates should in both cases bear the same date, which might be that either of their joining, or passing out from, the Royal Army Medical Corps College, Millbank.

(3) There should be joint preliminary training, as at present, at Millbank; but Indian Medical Service officers between five and ten years' service should, like Royal Army Medical Corps officers, return to Millbank for subsequent courses, till such time as adequate facilities for such training are provided in India. We agree with the Verney Lovett Committee as to the need of providing such facilities.

(4) The rules and the periods of service for promotion up to the rank of major should be similar for both services.

(5) No Indian Medical Service officer should be eligible for civil employ till he has completed at least two years' service on the military side, and has been certified by the Director Medical Services as fully qualified on that side.

(6) The selection of officers for civil employ should be made by a Board, consisting of the Director-General Indian Medical Service as President, the Director Medical Services, and not more than two lay members to be nominated by the Government of India.

(7) An Indian Medical Service officer should select finally between military and civil employ in his 16th year of service; and if he elects for, and is finally posted to, civil employ, he should be debarred from further military employ, except as in (9) (*c*) below, and from higher rank than that of lieutenant-colonel, to which he would rise automatically under the time scale for the time being in force.

(8) Promotion to lieutenant-colonel for Indian Medical Service officers in military employ should be subject to selection, as in the case of the Royal Army Medical Corps.

(9) Officers in civil employ shall be classified as:—

> (*a*) Ordinary war reserve—up to ten years' total service.
>
> (*b*) Special war reserve—up to sixteen years' total service.
>
> (*c*) All others.

Officers in category (*a*) would be liable to recall to military duty in an ordinary emergency, and those in (*b*) only in a greater emergency.

Officers in category (*a*) and (*b*) should be required to keep up their military training by periodical return to duty with troops; a period of three months every three years is suggested. Officers in class (*c*) should only be recalled in a very serious emergency, for work as specialists and consultants, subject to the sanction of the administrations under which they are serving and to the extent agreed upon. They should, on recall, be given suitable temporary rank, on the analogy of the private practitioners employed by the War Office during the war.

(10) Officers of the Royal Army Medical Corps should be posted to India in the various grades for tours of duty as at present, and should be entitled to a reasonable share in the higher military administrative appointments.

(11) In view of the fact that the Director Medical Services is the head of both the military medical services, the post should be held by an officer of the Army Medical Service and the Indian Medical Service alternately.

(12) Exchange of officers between the Royal Army Medical Corps and the Indian Medical Service should be allowed, as at present.

(13) Interchange of duties between officers of both services, *e.g.*, charge of British and Indian station hospitals, field ambulances on manœuvres, etc., should be encouraged.

(14) If a fixed proportion of Indians be recruited for the Indian Medical Service, that proportion should be maintained in the military and civil branches.

(15) On the analogy of other Indian services, the pay of the Indian Medical Service should be substantially higher than that of the Royal Army Medical Corps when employed in India. This is necessary in order to attract recruits to the Indian Medical Service. Similarly, the Indian Medical Service pensions should be on a higher scale.

OPENING OF THE WINTER SESSION.

MEDICAL RESEARCH AND EDUCATION.[1]

BY

SWALE VINCENT, LL.D., D.Sc., M.D., F.R.S.,

Professor of Physiology, University of London.

In delivering an opening address it is fitting that I should speak upon a topic in which we are all profoundly interested. I have therefore chosen medical research and education. My own justification for speaking on this subject is that I have for more than a quarter of a century been intimately associated with medical research and education in different parts of Great Britain and in Canada, and have also had opportunities of studying the methods employed in the United States of America and the continent of Europe.

It is frequently urged that our medical education should be more "practical." In advocating or opposing this doctrine we must understand precisely what is meant by the term "practical." If by it we mean "applied" or "professional," then the proposal to make our education and our research more practical is fraught with danger. On this point I should like to quote a passage from an address by Professor Pearce of the University of Pennsylvania[2]:

"In recommending to you that, as practitioners, you keep always the point of view of the investigator, I realize fully that as you go out among so-called 'practical' doctors you will find many who sneer at what they term the 'scientific' doctor. This view, of which we hear less and less each year, is a survival of the opinion commonly held prior to the development of the sciences of bacteriology and physiologic chemistry, which sciences by their practical applications to everyday medicine, have perhaps done more to dispel it than is usually realized. I may quote from the words of a past and present teacher in this school to illustrate this change in attitude. Oliver Wendell Holmes, in an introductory lecture to the class of 1867, discussed the question of whether or not the young physician should take an active interest in investigating in medicine. He expressed his disapproval in the words, 'Take down your sign or never put it up,' thus implying that at that time practice and investigation were considered incompatible. The same implication we find also in his frequently quoted phrase, 'If a man has not plenty of good common sense, the more science he has, the worse for his patient.' Thirty years later we find your present professor of comparative anatomy summing up the matter in the statement, 'So far as I know, the most important difference between a "practical" doctor and the truly scientific is that the patients of the former are more likely to die.'"

Even from the narrowest utilitarian standpoint it is a short-sighted policy to be too "practical." By limiting too rigorously the scope of investigation, one runs a serious risk of checking discovery altogether. The whole of the subject of electricity, which now plays such an important part in our daily life, has been evolved not by the "inventor" or by the "practical man," but by the patient and disinterested studies of such men as Faraday and Clerk Maxwell. Our knowledge of disease has been advanced in recent years not only by medical men, but by botanists, zoologists, and chemists. It behoves us not to regard too anxiously the immediate practical value of research. Most of the epoch-making discoveries have had for some time little or no direct application to medical practice. To our grandfathers nothing could have been thought more improbable or even absurd than that a study of the different species of mosquitos and their life-history could lead to the discovery of a means of abolishing yellow fever. We must even beware of undue haste in putting discoveries to use. Even in the laboratory itself it is possible, by a too close concentration to one's particular line of work, to miss great opportunities of enlarging the bounds of knowledge. I have heard of a physicist who was interested in scientific photography and who noticed many years ago that his photographic plates always became fogged in presence of Crookes's tubes, but who, being a "practical man," simply took special care to keep his plates away from the tubes! This is an exquisite example of a too practical man who just missed (through failure to keep his mind alert) one of the greatest discoveries of modern times, a discovery made some few years later by Roentgen of Wuerzburg.

It is my opinion that it is not desirable to emphasize in a student's course the more purely professional part of his life's work. Throughout his after-life he will have ample opportunity for making himself familiar with these matters, but he will probably never again have the chance of carrying out a chemical analysis, a physiological experiment, or a careful histological *post-mortem* examination.

If by a "practical man" we mean a doctor who is equipped by his training to apply promptly and efficiently such treatment as may be the best for his patient, then, of course, "the practical man" is the best kind of man. But it is my firm conviction that such practitioners can only be turned out by our medical schools if the education given is of the broadest and most generous type, and if we aim above all to instil into our students the true scientific spirit, so that they shall always regard their cases as problems, to the solution of which they are to give their utmost skill and energy, employing their mental tools as they have been trained to use them in their scientific studies.

As for the methods of our teaching, I fear there is need for great improvement. The formal lecture without demonstrations is a pitiable anachronism. It is a survival from the days when there were no textbooks. Students nowadays hear so many lectures that they become almost immune to any influence in this direction. In the majority of subjects in the curriculum a short introductory course of about forty lectures is all that is necessary or desirable. Advanced students should have the privilege of attending short special courses delivered by the staff or investigators on subjects to which the lecturers have devoted special attention.

On the other hand, the time devoted to laboratory work should be considerably increased, and the lectures ought to be, to a large extent, explanatory of the laboratory courses. Heads of departments would do well not to look upon practical classes as matters beneath their notice, and not to leave them entirely in the hands of assistants.

Teaching and Examinations.

A student recently told me that his idea of a good teacher was one who would make his life a hell until such time as he knew enough to pass his examination. Now the student who holds such views is not entirely to blame for his state of mind. The medical schools have done much to foster a belief in the minds of students that their teachers are called upon to hold innumerable classes of the "grinding," "coaching," or "cramming" variety; and

[1] Introductory address at the opening of the eighty-sixth winter session of the Middlesex Hospital Medical School, on October 1st, 1920.

[2] *Journ. Amer. Med. Assoc.*, 1911. Part of an address to a students' society at Harvard University.

the schools have been tempted to do this out of a spirit of rivalry and competition with other schools, which it is impossible to justify. Tutorial or viva voce classes are not in themselves bad, but so frequently are the topics of discussion those with which the students have no actual first-hand knowledge, and so frequently do they deal with phenomena of which they can call up no definite mental images, that this method of spoon-feeding becomes a serious evil. The more so since students are tempted to neglect the systematic laboratory courses and trust to the help of the tutorial classes held just prior to each examination. Great improvement would result if medical teachers could be induced to study more carefully their educational methods. For example, students should be induced to see for themselves, and not always told what they are to see; they ought to be made to find out for themselves, and not told what they must find.

Dr. Thomas Lewis very reasonably insists that much more attention should be paid to human physiology in class work. The normal should be thoroughly known before the student passes on to the study of the abnormal. A large part of the trouble arises from our examinations. The evil reactions of excessive and at the same time defective examinations upon learning are nowhere more manifest than in medical education. The teaching is too frequently interrupted by tests. No sooner have the students settled fairly down to work than they begin to inquire, "Will this work pay?" "Shall I get this in the examination?" This spirit is fatal to all sound learning.

But if examinations are an evil, albeit a necessary evil, how can this be mitigated? What are the alternative methods suggested of securing the ostensible objects of examination — namely, efficient study and competent teaching? In the first place, the external examiner must be abolished and the teachers must be the examiners for their own students. A system of daily marking for observations made and for practical work done might with great advantage be substituted for the ordinary practical examination. Such examinations are of necessity very unsatisfactory. The tests to be employed are, from the nature of the case, very few, and must be well known beforehand. If a student be asked in an examination to conduct an experiment, even of the simplest nature, which he has not had the opportunity of rehearsing, then complaints and protests arise both from candidate and university authorities. The majority of our tests in laboratory work have not to be directed towards estimating a candidate's power of solving a problem, but rather utilized as a means of judging his power of remembering how to repeat proceedings which he has carried out several times before. From an educational standpoint such tests are valueless.

It is a source of infinite confusion that the students in a medical college are divided up into several groups, with aspirations not to learn different branches of a subject, but to pass different kinds of examinations. It frequently happens that a large part of their energy and ingenuity is directed towards studying the idiosyncrasies of the various examiners and in reading their textbooks. When this kind of "preparing for examinations" extends to the teachers themselves, the limit of educational depravity has been reached.

The Place of Research.

One of the functions of a medical school is to train competent practitioners of medicine. But it cannot be too strongly urged that this is not its only function. A medical school worth the name must add to our stock of medical knowledge and must rear a number of young men to become teachers in the medical departments of our universities. Teaching, in my opinion, should not be divorced from research. Every teacher should be also an investigator. "To engage conscientiously in teaching is a form of research." Lecturing is a valuable means of arranging one's ideas, and in facing a keen and critical group of students the lecturer is frequently impelled to a more careful and discriminating treatment of his subject. It has been pointed out also "that in the stimulus of talking very often new and useful points of view present themselves." I have heard it recommended that the lecture hour be regarded as an agreeable relaxation for the lecturer and a period of refreshing sleep for the students. But I venture to think that if the lectures be not too many and if they are of the character I have suggested, even these laudable purposes fall into a secondary position. If the teacher be also an investigator it will make a great difference to the nature of the teaching. The best students are invariably turned out by men actively engaged in research. Such men are constantly on the alert for new methods, both in their investigations and their teaching; they inspire the same alertness in their students. The younger men who act as lecturers and demonstrators in university departments deserve special consideration. Rarely can such young men succeed in carrying on fruitful scientific work unless the head of the department sets the example and lends his encouragement and advice. I have known several instances where a professor has in the course of years had numerous assistants with enthusiasm and capability for research, but it has been urged that "there was no time" for research, and that "teaching was so much more important," and the suggestion of investigation on the part of the assistants was discouraged, or the attempt forbidden. The young teachers trained in such departments frequently obtain a reputation for being "good teachers," which too often means that they develop a marvellous capability of pushing bad students through worse examinations.

The best teaching can only be carried out in an atmosphere of research. The view has sometimes been expressed that a really efficient teacher should confine his attention to teaching. A moment's consideration will show how vain a thing and how fondly imagined is this. Examine a modern textbook in any subject and investigate the method of its compilation. The portions which treat of recent advances must consist largely of extracts from recent monographs or contributions to the scientific journals. Surely it is well if the lecturer has himself obtained first-hand knowledge of some of these advances, and better still if he has made some of them by his own investigations. The only satisfactory method of gaining a clear comprehension of any subject is to study the original sources of information and patiently strive to add to the sum of knowledge. It has been very truly said[3] that "a teacher who devotes an inconsiderable part or none of his best hours to research cannot long hold his place as a fertile and effective teacher." Every teacher knows that his lectures are infinitely more inspiring when he is speaking upon those branches of his subject on which he has worked than when he is talking of matters with which he has only second-hand knowledge, for no one can personally verify all the facts of his science. There is a vast difference in treatment in the two cases, and students are not slow to detect it. A student who knows that he is receiving his instruction in an active research department receives an inspiration which takes him on into his everyday practice with a true scientific spirit. The student in the other kind of department has no impetus but to learn enough to pass his examinations. It follows from what I have said that the medical school which encourages research in all its departments will always attract the best students.

Separate research chairs and research departments or institutions are, in my opinion, except in quite exceptional cases, undesirable. Even in purely technical or applied science it is now being generally recognized that the best original research is to be looked for in teaching institutions. The establishment of research institutions by the Government and by private munificence is likely to draw away the best men and the highest class of work, and to leave research in the universities in a deplorable condition. Let us consider for a moment how the necessity of such research posts has arisen. There can be no doubt that in the past heads of departments have been appointed who had no capability or no desire for original investigation, and to obviate the disagreeable necessity of getting rid of such men, new chairs, departments, or even institutions have had to be created in order to ensure that some adequate investigation may be carried out. This is, in my opinion, a thoroughly bad policy. By such an arrangement the students lack the proper inspiration which is derived from an active worker who is also an enthusiastic teacher, and the pure investigator misses the opportunity of formulating his rapidly acquired new views. It is of the greatest profit to students to be kept in constant contact with the growing edge of the subject. It is

[3] Sir Clifford Allbutt, BRITISH MEDICAL JOURNAL, October 14th, 1905.

often possible to utilize the advanced class work as a means of investigation. I therefore strongly advocate that every department in a medical school should unite teaching with original investigation. In order that this may be achieved it is all-important that the teacher should have abundance of free time for thought, for reading, and for experiment. If his time be filled up by endless elementary classes or administrative work, he cannot be expected to contribute to the advance of knowledge. There are two ways in which more free time may be found for the prosecution of research—namely, the increase in the teaching staff and the creation of new departments. Research in our medical schools will be considerably advanced with increased recognition of the hospital as the homologue of the research laboratory in general science. It has been pointed out over and over again that the essential, fundamental methods of experimentation have not yet been diffused to a sufficient extent into the regions of practical medicine.

Perhaps the quality most essential for successful investigation is enthusiasm. This must constitute a stimulus powerful enough to sustain the worker through long periods of laborious drudgery, when apparatus will not work, when all goes wrong, and the outlook seems hopeless. Every director of a scientific laboratory must have realized that the qualities of enthusiasm and dogged perseverance are just as valuable in scientific work as those of "brilliance" or "cleverness." The educational value of original research is immense. A new man is created whenever a student, free from the terrors of examinations, has devoted himself to an experimental problem and has carried it to a successful issue. Such a man is better able to attack the problems of his everyday medical life, and to cope with emergencies, than many of his fellows who may have read more books or passed severer examinations.

I am persuaded that nothing but good could come of a greater freedom and elasticity in the medical courses. Students should have a greater latitude of choice in subjects to be pursued, though, of course, certain fundamental subjects must always remain obligatory. It is generally recognized that the curriculum is sadly overburdened, and the elective system is, to my mind, the only practicable method of relieving the strain. This system would have the additional advantage of permitting every student to do some kind of research, and so to increase materially his mental calibre and equipment. As an example of the elective system applied to the subject of physiology, we might suggest that all students should attend a general course of forty lectures. Then, in addition, the department should provide short courses of eight to ten lectures, with laboratory work (by people specially competent to deal with the particular subjects), in general physiology, physiology of the circulation, the nervous system, and so on. No student should be required to take all these courses, but only a certain number. The same arrangement might well be applied to other subjects and to groups of subjects.

The Need for Government Aid.

Perhaps the greatest hindrance to progress in medical education has always been, and still continues to be, the difficulty in finding money to defray the expense of buildings and laboratory equipment, to say nothing of the salaries of teachers. Although we must record a debt of great gratitude to the few generous and high-minded men who have endowed chairs and even institutions, yet we have every reason to be ashamed of the lack of wide public support to our universities. Successive Governments have left our educational institutions on the verge of starvation. The universities are not the offspring of our Government, but, since they have been left on its doorstep without proper means of nutrition, it will be compelled in common decency to take them in and adopt them. No university can be self-supporting, and private munificence is too hazardous to be relied upon.

I wonder if it has ever occurred to any of you, or if it has ever been laid before you, that a scientific man is the only servant of the nation who is expected to do his work without proper appliances. A business man has suitable appointments and fittings adapted for saving of time and perfection of technique; but a scientific man has in many cases to be content with the most miserable makeshifts. Within the last few years the conditions have somewhat improved in respect of those subjects which are recognized as valuable in the pursuit of war and the amassing of wealth. In medicine our Government has preferred to endow separate research institutions rather than to support the medical departments of universities. The director of a university laboratory is indeed supremely lucky if his place of work is as well adapted for its purposes as a bank, a departmental store, or a hotel kitchen. This deficiency is painful enough in many of our larger universities, but what is the state of affairs in our smaller institutions can only be left to the imagination of those who do not know by bitter experience. The reason of this deplorable condition is clearly to be sought in the lack of interest in and appreciation of scientific work on the part of the general public and the reflection of this state of affairs in the attitude of our Governments. In regard to medical education the public has never realized that efficient training of doctors is absolutely dependent upon a sound scientific education. And this is perhaps not to be wondered at, since medical men themselves have not always held the most enlightened views on the subject. This is, of course, only an expression of the British suspicion and scepticism as to the value of science. There has been a partial awakening, but our poverty-stricken universities still stand as a sign that everything has yet to be done. State support to the universities should be generous and complete. Teachers should be well paid and laboratories well endowed. Here in London all our schemes and proposals are baffled and defeated by lack of funds, by ancient tradition and the weight of great vested interests, combined with the evils of our examination system.

ST. MARY'S HOSPITAL.

The opening of the session at St. Mary's Hospital, Paddington, on October 1st, was attended by Dr. Russell Wells, Vice-Chancellor of the University of London, and Dr. J. G. Adami, F.R.S., Vice-Chancellor of the University of Liverpool. After distributing the prizes and certificates for 1919–20, Dr. Adami delivered an address dealing with recent developments in medical education. He said that words of warning were needed lest, in consequence of the financial difficulties by which they were beset, the universities and medical schools should lose their power of initiative and their independence. In accordance with the advice of the Chancellor of the Exchequer, students' fees, which before the war covered from one quarter to one-third of the cost of education, had been increased; but in both universities and training colleges the Government had declined to augment the subsidy granted towards the education of ex-service students already on the roll. Dr. Adami hoped that this decision would be reconsidered; he pointed out that grants of this kind did not connote such rights of Government control as would be established, for example, by the provision of pensions for university teachers. He expressed considerable doubt as to the value of the movement for full-time professorships in medical subjects, according to the "unit" system. This movement, he said, had reached us more directly from America, a country which during the last ten years had presented instances both of the most inadequate and of the most elaborate equipment for medical education—on the one hand, the unsatisfactory conditions shown in the report of the 1910 Commission, and exemplified by medical schools without dissecting-rooms or without laboratories; on the other hand, the lavish equipment of the Johns Hopkins, Harvard, and many other schools. Whole-time professorships were first instituted at Johns Hopkins, and other hospitals had followed; one modification popular in America was that the teacher should enjoy at the hospital limited opportunities for private consultations or operations. More remotely the system was of German origin. In the United States satisfaction with its working was not unalloyed, even among those who had accepted whole-time teaching posts. In Germany, where for generations there had been full-time State-paid professors, the results, Dr. Adami believed, were significant and sinister. Much industrious and intense study, much prolific publication, and much involved classification had ensued; but if the hall-mark of success lay in the establishment of principles rather than in mastery and classification of detail, the significant

advances in medicine had been forthcoming from other than German sources. He cited as examples the additions lately made in neurology and cardiology and in the knowledge of the internal secretions and of antiseptics. The most significant names of German investigators were those of laboratory workers, not of units in the hidebound professorial system. The unit system was apt to have the disadvantage that it concentrated on the most promising pupil, to the detriment of "all-round" instruction. The ideal physician made it his duty to treat patients, not disease; the teacher who was entirely cut off from private practice might be tempted to regard patients as "material"—the students of such a teacher would not come into association with the highest ideals of medicine. Dr. Adami foresaw, too, that the young man of 30 might be tempted, after a period of years spent in whole-time teaching, to leave this work for private practice. On the other hand, the lecturer recognized that the two great disadvantages of the system at present obtaining in London were: first, that competition was so intense as to make the graduate afraid temporarily to leave his hospital, lest he should lose his seniority; and secondly, that our existing system made for solitary leaders and not for great schools. Pathological laboratories must not be placed away from the hospitals; it was by association with clinical work that pathology was kept alive. Although himself a "laboratory man," he felt very doubtful of the wisdom and practicability of adopting in England the whole-time system of professorial appointments; it was preferable, he thought, before extending the system in this country, to make further observation of the results obtained elsewhere.

KING'S COLLEGE HOSPITAL.

MR. F. RICHARDSON CROSS, LL.D., F.R.C.S., lecturer on ophthalmology in the University of Bristol, in his introductory address at the opening of the new session at King's College Hospital, on October 1st, alluded to the advantages of resident collegiate life, and expressed his satisfaction that the new hospital at Denmark Hill included a hall of residence for medical students. Mr. Cross, in his interesting survey of progress, described the investigations, conducted in the middle of the last century by Spencer Wells and others, into the excessive mortality following surgical operations; a description was given of Pasteur's and of Lister's work and their results. Just as Lister and his colleagues aimed at the prevention of suppuration rather than its cure after being established, so it was now the aim of the physician to prevent disease, and to watch and follow its very early beginnings. Students should develop to its highest degree the power of accurate observation by sight, touch, and hearing. Aristotle had said: "Men who desire to learn must first learn to doubt, for science is only the solution of doubt"; the true method of science was that of observation and experiment. At present the work of the general practitioner gave him but little time for study and recreation, and many were overworked and underpaid. The State, through the Ministry of Health, was making much use of medical services, and would more and more extend them. No doubt the medical profession would continue willingly to give its best services, both of time and knowledge, towards treatment in voluntary hospitals; but where the State undertook the responsibility of dealing with the sick, a proper payment would be expected for the services rendered by medical men. It was important that the profession should continue as far as possible to be self-governing.

WESTMINSTER HOSPITAL.

THE inaugural address at the opening of the winter session at the Westminster Hospital Medical School on September 30th, was delivered by Dr. A. M. Gossage, C.B.E., senior physician to the hospital. Dr. Gossage called attention to the great increase in the number and complexity of the subjects that had to be taught to the medical student since he was himself a student. This meant an ever-increasing expense, and medical education, like other forms of secondary education, was no longer self-supporting. In the lack of endowment the schools had to look to the Government for assistance, and it was probable that the Government would insist on economy both in the medical schools and in the hospitals. One of the obvious measures of economy was the concentration of the various schools into a few centres, so that amalgamation, whether voluntary or forced, must be expected in the near future. It was hoped that this would result in the use for teaching of the wasted material to be found in special hospitals and infirmaries.

MEDICAL SCHOOL DINNERS.

ST. BARTHOLOMEW'S HOSPITAL.

THE annual old students' dinner was held after an interval of seven years on October 1st, with Sir Anthony Bowlby, K.C.B., K.C.V.O., K.C.M.G., President of the Royal College of Surgeons of England, in the chair. The number of those present (350) far exceeded all previous records. The Great Hall of the Hospital being unable to accommodate so large a company, the Lord Mayor offered the Guildhall of the City of London for the dinner, and in the Guildhall it was held. The Chairman, after the loyal toasts had been honoured, submitted the toast of the "Imperial Forces of the Crown," and spoke of the debt owed by the Empire to each branch of the services. He claimed that in the great war which had come and gone since the last dinner, Bart's men had upheld the old tradition in every theatre of war. Of 20,000 officers who served in the R.A.M.C. 2,000 were St. Bartholomew's men, and more than a hundred had given their lives. The toast was responded to by General Lord Horne, who remarked that Henry VIII, in the Charter he gave to St. Bartholomew's, enjoined it to take special care of those broken by war. That this duty had been faithfully observed in recent times the speaker could testify from his own knowledge. Lord Horne ended with a warm appreciation of the value to England of the great voluntary hospital system. The President of the Royal College of Physicians of London proposed the toast of "Prosperity to the Hospital and the Medical School." Passing lightly down the centuries—from Rahere's first visit to the city in the twelfth century in search of a lost book, to the reorganization of clinical teaching at the hospital during the past year—Sir Norman Moore suggested to Sir Archibald Garrod and his colleague, the Professor of Poetry at Oxford, that a better word than "unit" might be found. Sir D'Arcy Power, in a short reply, spoke of the present flourishing condition of the medical school with its 650 students. "The Health of the Visitors" was proposed by Dr. Howard Tooth, the senior physician, who briefly mentioned the many distinguished guests. Sir Arthur Lawley, Commissioner for the British Red Cross Society in France during the war, responded in an eloquent speech. The Chairman's health was proposed in very warm and intimate terms by Sir Charles Gordon Watson, who voiced the feelings of all present in his tribute to Sir Anthony Bowlby as a surgeon in peace and war, as a man, and, above all, as the students' friend. The Chairman, in his reply, asked all present to join with him in sending a message of thanks to the Lord Mayor and Corporation of the City of London for their courtesy in lending them the accommodation of the historic Guildhall for that unique occasion.

ST. THOMAS'S HOSPITAL.

THE old students' dinner at St. Thomas's Hospital was held at the Connaught Rooms, under the chairmanship of Dr. F. Foord Caiger, on October 1st, when some 160 past and present members of the school met together. The loyal toast having been duly honoured, the Chairman proposed that of "St. Thomas's Hospital and Medical School." He sketched the changes and improvements which had taken place in the hospital and medical school during recent years, and, in referring to the old physicians and surgeons of the past who had helped to bring the hospital and medical school to its present high position, related some interesting reminiscences. Sir Arthur Stanley, treasurer of the hospital, in responding, said that great honour was due to his predecessor, Sir James Wainwright, without whose able assistance the hospital could not have attained its present position. He said that when a representative in the House of Commons he used to look over the water and admire the architecture of St. Thomas's Hospital, and since he had become associated with the institution he liked it more and more. Unfortunately the revenue of the hospital was

not increasing in proportion to the expenditure, and as many former subscribers had become poor the hospital could not expect to get money from them now, so they had to look to the working class, who were better off, for support. The London Hospital was in favour of making a charge to patients in a position to pay, but he was still in favour of the voluntary system, and he was sure the patients would subscribe as much as possible to help maintain the hospital. Sir Cuthbert Wallace, Dean of the Medical School, who also replied to the toast, referred to the different new departments introduced into the hospital in late years, and recalled the names of men of distinction in the profession who had been connected with it. The school, he said, was in a flourishing condition, and the entries were increasing. The sum of nearly £5,000 had been collected towards the St. Thomas's War Memorial, and it was hoped that further subscriptions would be forthcoming; they could, if necessary, be spread over a number of years. The toast of the Chairman was proposed by Dr. Turney and acknowledged by Dr. Caiger.

THE MIDDLESEX HOSPITAL.

The past and present students of Middlesex Hospital Medical School gathered at dinner at the Wharnecliffe Rooms on October 1st under the chairmanship of Dr. R. A. Young, C.B.E. The company included the Earl of Athlone, treasurer of the hospital, and Admiral of the Fleet Earl Beatty, who had distributed the prizes earlier in the day. In proposing the toast of "The Hospital and School," the Chairman claimed that Middlesex had been justified in preserving its self-contained character against the apostles of partial fusion for London medical schools; a self-contained school, in his opinion, was able to command a more complete *esprit de corps*. The Earl of Athlone, who responded, said that highly important and necessary as was the treatment of the sick in hospital, such service was second to the wider purpose which, in combination with the school, the hospital sought to achieve. Treatment in hospital brought relief to the comparatively few; medical education and research restored the health of many more, and would, if encouraged, procure immunity for the rest. It was a common error to suppose that voluntary teaching hospitals existed merely for the benefit of the sick poor. There was no man or woman who did not owe these institutions a debt of gratitude. But to commend this aspect of their work to the public involved explanation and instruction, and sometimes even argument, and he was afraid that in the past those of them who had championed the cause of the voluntary hospitals had shirked the harder for the easier path, and had based their appeals on grounds more immediately understood. This, however, had meant leaving the public in ignorance of the true mission of these centres of healing, and the task of enlightenment must be faced. Mr. A. E. Webb-Johnson, dean of the school, also responded. Sir Edward Stewart returned thanks for the past students; and, in accordance with tradition, the senior Brodrib scholar, Mr. Wise Howorth, for the present students. Sir Alfred Pearce Gould proposed the health of the guests, to which Earl Beatty responded. The admiral laid stress upon the value of comradeship, which, he believed, existed in the medical profession as it existed on the sea, and in the one calling as in the other it involved the principle of loyalty, not only of juniors to seniors, but, what was equally important, of seniors to juniors. Dr. Comyns Berkeley proposed the health of the Chairman, Dr. Young, and the company separated after the singing of "Auld lang syne."

CHARING CROSS HOSPITAL.

The annual dinner of past and present students of Charing Cross Hospital took place on October 4th, with Dr. J. Mitchell Bruce, C.V.O., in the chair. The toast of "The Hospital and Medical School" was proposed by Dr. T. W. Eden, who reported an unprecedented activity in the affairs of the hospital; it had completely recovered from the condition of poverty which existed ten years ago (when half the beds were closed) and was now solvent. This change was due to the great ability of Mr. George Verity, chairman of the Hospital Committee, and to the work accomplished by three successive deans, Dr. Addison, Dr. Hunter, and Dr. Fenton. During the last ten years the number of students had doubled; the admission of women to the school had been abundantly justified. Dr. Eden believed that the face of medicine would be changed in the coming decade; its rewards and its opportunities would be increased, but there were new responsibilities to be shouldered by the present students. The real rewards of the profession would always lie in the work. In his reply, the dean of the school, Dr. W. J. Fenton, alluded to the success which had attended the founding, in 1919, of a pathological institute, with a whole-time staff. It was a mistake, he believed, to divorce research and teaching, and the presence of students acted as an incentive both in hospital instruction and in research work. The type of men suitable for whole-time appointments under the "unit" system would have to be trained; in the end whole-time and half-time teachers would work side by side, and the change on the whole would be beneficial. Dr. Fenton alluded to the difficulties experienced at present in securing the services of biochemists. Sir Herbert Waterhouse, F.R.C.S., proposed the health of the guests, and reply was made by Mr. J. F. Tower, chairman of the Nursing Committee, and by Sir James Cantlie. Mr. George Verity voiced the feeling of affection with which the Chairman was regarded by all connected with Charing Cross Hospital, and Dr. Mitchell Bruce replied in suitable terms.

England and Wales.

The Manchester Medical War Committee.

We have recently received the final report of the Manchester Medical War Committee, which was constituted on October 14th, 1915, as part of the organization then being developed by the Central Medical War Committee. The first chairman of the Committee was Dr. T. A. Helme, who was succeeded by Dr. T. A. Goodfellow. Dr. W. F. Dearden was honorary secretary to the Committee throughout its existence.

The Manchester Committee was one of the most energetic and successful of the local medical war committees, and in its final report we have a record of the successive pieces of work, some instigated by the Central Committee, and some promoted by Manchester itself. Beginning with the registration of all practitioners, with information as to the kind of war work they could undertake, and voluntary enrolment, the response to which was extraordinarily good, the report proceeds to describe the method of selection for service. There is a brief note of the difficulty experienced in getting some Government departments to part with their young medical officers, and of misunderstandings which occurred over calling up of men by the Central Committee and by the Army Council. But these difficulties were satisfactorily dealt with. The work on which the Manchester Committee may chiefly pride itself is probably its scheme for the conservation of practices. Few local committees undertook this matter so thoroughly; and a statement of receipts and payments appended to the report demonstrates the success of the scheme. The Committee is to be congratulated on the assistance it obtained from Messrs. Jones, Crewdson, and Youatt, who generously undertook all the book-keeping and accountancy free of cost to the Committee and the practitioners concerned. Allusion is made to the incident of the displacing of civil medical practitioners in hospitals by American army doctors and the eventual replacement of the dispossessed Manchester practitioners. A description of the examination of recruits and pensioners follows; and in this matter also the Manchester Committee was able, after some argument, to gain recognition from the Ministry of National Service for the system it advocated. Towards the end of the report mention is made of mobilization of the profession, for which Manchester was prepared to work out a scheme. It is remarked that "owing to the somewhat rapid termination of the war these regulations, which would have been somewhat troublesome to work, were never put into operation." Probably this was fortunate for Manchester as well as for everyone else.

The Manchester Committee is to be congratulated on the way it carried out its work. Though on not a few occasions the Committee found itself at loggerheads with higher powers, yet this may be regarded as a sign of its

energy and enthusiasm. And it is certain that not infrequently Manchester proved in the end that the decisions it had reached were right.

Training of Blind Students.

The necessity for fuller and better training of the blind was strongly urged by the Departmental Committee of the Local Government Board on the Welfare of the Blind appointed in 1918. Paragraph 118 of their report expressed their view:

"We are not sure that it is always sufficiently recognized that a considerable period of training is essential. A blind child on leaving school at 16 is not an efficient worker, and cannot be expected to be a wage earner. Not only must the pupil receive a thorough training in all branches of the industry he is to pursue, but a considerable period is necessary to enable him to acquire the speed essential to a successful worker."

The idea in the mind of the Committee appears to be the arrangement of a "college course"—a period of work in a training institution which would become an essential link between the special school for the blind and the workshop. Something on these lines has been already brought into being by some of the more energetic of the local education committees; promising children have been awarded "scholarships," whereby they have been enabled to take out an extended course of technical instruction at the more advanced blind schools. Practical experience of the working of these schemes shows that they are entirely beneficial. These trained blind youths are able to take up work at 18 years of age in a manner which is impossible for the very best of them at the age of 16 years, and the results of their better ability for skilled work is shown in the pay sheets of the institutions to which they have been attached. The Board of Education proposals give further sanction to this educational work, and promises higher grants to meet the cost.[1] Ophthalmic surgeons to blind schools might bring these regulations tactfully to the notice of the authorities of the institutions to which they are attached.

Scotland.

Notification of Varicella.

The Scottish Board of Health has issued regulations, dated September 28th, 1920, requiring every medical practitioner who may be in attendance on a person suffering from chicken-pox to notify forthwith the case to the medical officer of health of the district. If the case has already been notified, the practitioner will not be required to notify it afresh. Local authorities are required to pay to every practitioner a fee of half a crown for each notification made under these regulations if the case occurs in his private practice, and of one shilling if the case occurs in his practice as medical officer of any public body or institution. To this, however, there is the significant proviso that during such period as Section 5 of the Local Government (Emergency Provisions) Act, 1916, remains in force the fee for each notification of a case occurring in private practice shall be one shilling and no more. In every case the fee will be deemed to cover all expenses, including the cost of transmission. At the end of last April the Scottish Board of Health recommended local authorities to consider the advisability of applying the Infectious Disease (Notification) Act, 1889, to chicken-pox, in view of the prevalence of small-pox in the Glasgow district. About one-third of the local authorities in Scotland have since acted on this recommendation.

"But cases have occurred in other areas which through non-notification have to some extent stultified the action of the local authorities who have extended notification to chicken-pox, and small-pox continues to prevail in Glasgow, and to extend there and in other districts. Its dissemination is believed to be largely due to the movement of mild and undetected cases of small-pox."

While the intention of the new regulations is to correct as far as possible diagnoses of acute chicken-pox in cases of small-pox, it is pointed out that mild cases of small-pox are also sometimes confused with infections other than chicken-pox. Accordingly, practitioners are asked to seek the co-operation of the medical officer of health in any case of doubtful illness that has even a remote resemblance to small-pox.

[1] Regulations for the Training of Blind, etc., Students. Higher Education. Issued by the Board of Education. 1920. Cmd. 852. Price 1d. net.

Correspondence.

CLINICAL TEACHING UNITS.

Sir,—I am asked by the Medical Committee of St. Mary's Hospital to write to you in case you had decided to print any account of the address given by Professor Adami at the opening of the winter session. The remarks with regard to the grants to the school are not in accordance with the facts, and the views expressed with regard to clinical units, which in Professor Adami's address give the impression of an announcement made with the knowledge of the school authorities, are in open conflict with the policy of the school. The school receives a grant from the Treasury, and the Medical Committee are reluctant that anything should be published which might give the impression that they are opposed to the principle of such grants, or that they are not prepared to give the clinical unit system a thorough trial. At those schools where the unit system is on trial and still *sub judice*, an attack on the principle, if delivered with the school's knowledge, must raise suspicions of the fairness of the trial extended to the system. The committee, therefore, feel that such an attack made in these circumstances was unfortunate, and is liable to lead to misapprehension, and I am asked by them accordingly to place these facts before you.—I am, etc.,

C. M. Wilson,
Vice-Dean of the Medical School

London, W.1, Oct. 4th.

TREATMENT OF CALCULI IMPACTED IN THE PELVIC PORTION OF THE URETER.

Sir,—The phenomena noted by Mr. Clifford Morson as occurring at the ureteral orifice may be variously explained. It may be that the tone of the bladder fibres in the neighbourhood of the ureteral orifice, aided by the oblique direction of the lower end of the ureter, is sufficient to hold back the stream of urine until a certain head of pressure is attained and that then a rhythmic contraction passing down the ureter expels the urine; or it may be, as Mr. Benians suggests in a letter which I have recently received from him, that the bladder, like other organs provided with involuntary muscular fibres, has a systolic and diastolic period, and it is only during the diastolic period, when the fibres of the bladder are relaxed, that the urine is enabled to pass into the bladder.

I wish, however, to confine my statement as far as possible to the anatomical side of the question, and to say that my sole reason for venturing to interpose in the discussion was that I did not wish Mr. Clifford Morson or others to hesitate from enlarging the ureteral orifice by cutting in an upward direction through fear of injuring what Mr. Benians and I believe to be a purely hypothetical structure. The operation as described appears to be anatomically sound; in fact, if the view which Mr. Benians and I put forward in 1913 is correct—that the trigone is formed by the laying open of the distal portions of the ureter—the operation is merely an extension of one of Nature's own procedures.—I am, etc.,

William Wright.

The Medical College,
The London Hospital, E.1, Oct. 4th.

CHRONIC POST-NASAL CATARRH, ACIDOSIS, AND VOMITING.

Sir,—I read with interest in the current issue of the Journal the experts' discussion upon the sad results of allowing Psyche to interfere with healthy digestion. One aspect of the question as regards the causation of acidosis in some of these cases does not seem to be noticed, and that is the occasional association of the syndrome of symptoms—chronic post-nasal catarrh, acidosis, and vomiting. Whether or no Psyche has any hand in the matter I shall leave others to determine. I shall merely detail the facts. Having suffered at intervals for many years from this trouble, I have had special opportunities of investigation. The trouble in my case usually begins five

or six hours after an evening meal. I awake with a sensation of nausea, weight at the pit of stomach, eructations, and finally vomiting of an intensely acid and stringy mucus, evidently the backslidings of chronic mucous catarrh of the posterior nares. Shortly after vomiting I feel quite comfortable. My maternal grandfather suffered from a similar trouble.—I am, etc.,

Hove, Oct. 4th. W. Ainslie Hollis.

MENSTRUATION DURING SCHOOL LIFE.

Sir,—Having read with great interest Dr. Alice E. Sanderson Clow's paper on "Menstruation during school life" (October 2nd, p. 511), I should like to make a few brief criticisms, as I am working on the subject also.

Much of what she says is excellent, especially with regard to personal cleanliness, but from my own experience and observation she does not emphasize the possible dangers which may occur in later life due to over-activity in the periods during school or early life. No school-girl desires to make much of her poorly times, and most of them are most anxious to appear normal and quite well. Especially is this true of the athletic type of girl who will sacrifice anything rather than lose her place in a tennis or hockey team. It is afterwards, not at the time, when the mischief will appear. Here is an illustration first-hand:

> An athletic country girl passed through her schooldays and holidays without a single day of menstrual pain, and never gave up any game, however strenuous, at such times. She afterwards played a great deal of cricket, hockey, and tennis; rode and took very long walks, never making the slightest difference during her period. She laughed at those who rested. At the age of 21 she entered college life as a medical student, continuing her sports as before. After two years she complained of dragging pain during the period, which made the long laboratory hours difficult at those times. However, she never laid up, and being a day student had ample exercise, usually walking about five miles a day. The last few years she has been practically incapacitated for forty-eight hours during each period, and is too weak often to walk half a mile. The least over-exertion brings on a large flooding, even after the period has apparently ceased. She now greatly regrets the folly of her former strenuous exercise at those times.

This and other cases fully convince me that no great physical strain should be made on a girl's system during menstruation. Hockey, tennis, and especially riding and cycling, should be strongly discouraged for the first two days, without a thought of "molly-coddling." Though a natural function, menstruation is a temporary drain on a girl's vital energy, and it calls for special care.—I am, etc.,

Mary Andrews, M.R.C.S., L.R.C.P.

Totley Rise, nr. Sheffield, Oct. 4th.

MORTALITY OF VENEREAL DISEASES.

Sir,—I think Dr. Jane Hawthorne's letter on this subject calls for some protest.

Dr. Charles Russ in his letter of July 27th challenged Sir J. Crichton-Browne's statement that venereal disease was not lower than third amongst the causes of death, on the ground that the Registrar-General's returns only attribute to syphilis a very small total of deaths. I supposed the point of Dr. Russ's letter to be that, upon the basis of available data, we cannot rank the venereal diseases in *any* order; they may deserve the first place for all we can tell. The reasons why we cannot make *any* statistical statement are numerous. The most important is that we do not know how many of the population sustain an attack of venereal disease. Take, for instance, the case of aneurysm. Sir William Osler observed that in from 80 to 85 per cent. of subjects of aneurysm there was a history of previous syphilis; the significance of this depends upon a knowledge of the frequency of syphilis in the previous history of *all* decedents of the ages of those who died from aneurysm. We have not this knowledge. Dr. Fildes, I think, found that in a random sample of patients' friends attending the London Hospital, some 10 per cent. (I have not his figures at hand) gave a positive Wassermann reaction. This is a lower limit to the desired proportion, since some of those who at the time of examination had not been infected might become infected before they died. A German writer, Lenz, by an ingenious statistical process, reached a figure of over 80 per cent. as the proportion in Berlin, but his method, although ingenious, was, I think, unsound. I believe all medical statisticians would agree that, upon the basis of existing data, we simply cannot tell what *is* the precise share of the venereal diseases in the gross mortality of England and Wales.

Now, if Dr. Russ intended to point this out, as I suppose he did, why should he be made the target of so much indignant rhetoric? Perhaps his fault was to describe Sir J. Crichton-Browne's remark as a "serious misstatement of fact"; he should rather have termed it an unverifiable conjecture.

I should not have troubled you with these remarks had it not been for the concluding sentences of Dr. Jane Hawthorne's letter. It seems to me a breach of scientific decorum for one member of our profession to accuse another, who has merely called attention to fairly obvious statistical facts, of anxiety "to disprove the malignancy" of a disease, and dangerous to hint that we should combine in asserting that to be true which, whether true or false, we cannot demonstrate.—I am, etc.,

Loughton, Oct. 2nd. Major Greenwood.

Sir,—The Final Report of the Royal Commission on Venereal Diseases, page 6, quotes Dr. Stevenson, Superintendent of Statistics to the Registrar-General, as saying in his memorandum on the mortality from venereal diseases in England and Wales:

> "The worthlessness of the returns as an absolute statement of the number of deaths from venereal disease scarcely requires demonstration."

Dr. Stevenson's memorandum appears as Appendix I to the Report, and opens with the following sentence:

> "The statistics tabulated from the death registers by the Registrar-General cannot be claimed to afford any measure of the absolute amount of mortality properly ascribable to venereal disease."

Dr. Hawthorne, therefore, is perfectly correct in presuming that the Registrar-General "would be the first to acknowledge that his evidence" as to the mortality of venereal diseases "was certainly inconclusive."

As a member of the staff of the London Male Lock Hospital Dr. Russ is naturally familiar with the Report of the Royal Commission, and it is unfortunate that he should have supported his argument in his letter of July 27th by quoting the Registrar-General's figures, without at the same time referring to the Registrar's disclaimer as to their value.—I am, etc.,

Weston-super-Mare, Oct. 4th. A. E. Remmett Weaver.

Sir,—With regard to whether venereal is the third killing disease or not, I fancy not even Mr. Russ will have any doubt that syphilis is the *first* in infants under a year. It kills *in utero*, and, indirectly, it kills during birth, as all doing ante-natal work know if they take the trouble to trace the histories or observe the teeth of pregnant women with contracted pelves. I have no doubt that the so called rickets has been specific in origin, just as now the worst cases of rickets occur in congenital syphilitics who show marked "rickety" rosaries, etc. The signs of syphilis in babies are usually short-lived if we exclude marasmus, the most deadly of any. Time and again one sees cases of marasmus with none of the orthodox signs—perhaps merely either a widely open sagittal suture or posterior fontanelle, or, later, heaping of the sutures; then a sidelight is thrown on to the case, say, by finding the mother's ante-natal chart and discovering that a Wassermann test was found to be positive, after which she defaulted. Such a case occurred only a couple of weeks ago, since when the patient has not returned nor gone to the venereal disease clinic. The baby will probably die and be signed up, by someone not knowing the history, as marasmus simply; but it may live long enough to get pneumonia, as so many syphilitic babies do, or bronchitis and be signed up as dying of it. But, apart from the many cases that are missed and those that are not signed up as syphilitic for obvious reasons, there is plenty of evidence to prove that in babies it is the first killing disease. Take the causes of death classified in the

Bradford Infant Clinic report of 1917 of medical death certificates of 179 babies who died in that year:

	No. of Cases.	Per Cent.
1. Congenital syphilis...	58	32.4
2. Respiratory diseases	33	18.42
3. Marasmus and atrophy	26	14.53
4. Gastro-intestinal diseases	13	7.26
5. Convulsions	12	6.0
6. Tuberculosis	8	4.47
7. Measles	7	3 91
8. Pertussis	6	3.35
9. Congenital defect and debility ...	6	3.35
10. Meningitis	2	1.12
11. Prematurity	2	1.12
12. Congenital heart	1	0.56
13. Cleft palate...	1	0.56
14. Cerebral haemorrhage	1	0 56
15. Hydrocephalus	1	0 56
16. Accidental suffocation	1	0.56
17. Acute hepatitis	1	0.56

Here congenital syphilis is shown to be the *first* killing disease, even by the death certificates, but, as everyone knows, it may have been the actual cause in those classified as 3, 5, 9, 10, 11, and 12, and the predisposing cause in some of the rest.—I am, etc.,

Leeds, Oct. 2nd. MARION E. MACKENZIE.

DEATH AFTER TONSILLECTOMY.

SIR,—For those who are interested in Dr. A. F. Sladden's note (BRITISH MEDICAL JOURNAL, September 18th, 1920, p. 438) it might be not unimportant if the author would be so kind as to state what kind of anaesthesia was used in his case, and whether there were symptoms before the operation that pointed in the direction of hyperthyroidism —for instance, an exaggerated pulse rate.—I am, etc.,

Rucphen, Holland, Sept. 20th. H. KOCH.

SIR,—With reference to Dr. Koch's questions, which you have kindly shown me in advance, the anaesthetic used was chloroform; no abnormality of pulse rate or other sign of hyperthyroidism was observed, although some enlargement of the thyroid had been noted.—I am, etc.,

Swansea, Sept. 27th. A. F. SLADDEN.

Obituary.

DAVID LLOYD ROBERTS, M.D., F.R.C.P.,

Honorary Physician, St. Mary's Hospital, Manchester.

WE regret to announce the death of Dr. D. Lloyd Roberts, which took place on September 27th at his residence, Ravenswood, Broughton Park, Manchester.

David Lloyd Roberts was in his 85th year, and until his fatal illness, which commenced about six weeks ago, he was still carrying on active consulting practice in Manchester, for long after the commonly allotted span he retained his acute mental faculties and his bodily activity. In Manchester he was the last of the physicians of the old school. Of short stature and sturdy build, with kindly, old-fashioned courteous manners, clean-shaven face and very keen eyes, he was a well known and noticeable figure of other times, driving in the narrow streets crowded with motor lorries and limousines in his simple one-horse brougham. Years after he had given up operating his opinion was sought for and valued in gynaecological cases.

Born in humble circumstances in Stockport in 1835, he early showed signs of unusual ability, so that he was taken from the chemist's shop where he worked as a boy and sent to school at Making Place Hall, near Ripponden in Yorkshire. His schooling over, he entered the old Manchester Royal School of Medicine as a student, and afterwards, on an exiguous income, he studied in the hospitals of London and of Paris. He was an articled pupil to William Smith, F.R.C.S., the first professor of physiology in Owens College. In 1857 he obtained the diplomas of M.R.C.S.Eng. and L.S.A., two years later graduating M.D. of St. Andrews; he became F.R.C.P.London in 1878.

After qualifying, Dr. Lloyd Roberts commenced in general practice in Manchester, and in 1858 he began his lengthy and distinguished association with St. Mary's Hospital for Women and Children by being appointed one of the district surgeons-in-ordinary. In 1868 he was elected honorary physician to the hospital, a post which he retained until his death; he gave up regular attendance at the hospital only a few years ago. He took a great part in the amalgamation of hospitals which produced the present two St. Mary's Hospitals, the maternity hospital, and the gynaecological and children's hospital, and he was a prominent member of the building committees. In 1885 he was appointed honorary gynaecological surgeon to Manchester Royal Infirmary, retiring in 1895 on reaching the age limit; at the same time he was Lecturer on Clinical Midwifery and Diseases of Women at Owens College, Manchester (now the Victoria University). He was a F.R.S. of Edinburgh, a former President of the North of England Obstetrical Society and of Manchester Medical Society. At the British Medical Association annual meeting in 1902 he was President of the Section of Obstetrics, and gave an introductory address on the Manchester School of Obstetrics and Gynaecology, a historical outline which was afterwards printed, with portraits, in this JOURNAL.

He was the author of a *Practice of Midwifery*, which went into several editions, of a work on *The Scientific Knowledge of Dante*, and of numerous clinical papers. In obstetrical and gynaecological operative surgery he was a pioneer, his first Caesarean section, in 1867, being one of the earliest recorded of the modern operation.

Dr. Lloyd Roberts was fortunate enough to have made a considerable fortune in the practice of his profession, and he spent large sums on forming what has been described as a "miniature Wallace collection." Mezzotints were what chiefly occupied his interest, and he had a very valuable collection of early and choice specimens of the best masters. Included also among his art treasures, however, were much valuable glass, particularly Jacobean glass, modern French book-bindings, old silver, china, water-colour drawings, old furniture, and old books, among them incunabula, printed before 1500. He had many rare early editions of the works of Sir Thomas Browne, and he himself edited, with an introduction, Sir Thomas Browne's *Religio Medici*.

Dr. Lloyd Roberts married the daughter of Mr. W. H. Occleshaw of Manchester; but his wife died in 1910, and he leaves no children.

RAYMOND VÉREL, O.B.E., M.B., CH.B., F.R.C.S.ED.,

Aberdeen.

DR. RAYMOND VÉREL died in a nursing home in Aberdeen in the early hours of September 29th. His death adds another to the list of younger surgeons who have lost their lives through acute infective disease contracted in the course of their professional duties. His illness commenced with a simple whitlow, which appeared at first of slight consequence, and gave promise of being cured by the simple remedies that he applied, but unfortunately some days later acute streptococcal septicaemia supervened. The intimation of his early death will deeply grieve his many friends, for it was his nature to make friendship wherever he went.

Raymond Vérel was a Glen Almond boy, and afterwards a medical student at Edinburgh, where he qualified with honours in 1908. After graduation he received a training in general surgery, but the influence of Dr. Logan Turner decided him to adopt the career of a specialist in diseases of the ear, nose and throat, and after further study in Vienna and on the Continent he commenced practice in Aberdeen shortly before the outbreak of war. Although a member of the 1st Scottish General Hospital he applied for and obtained a transfer to the Scottish Horse Mounted Brigade Field Ambulance, and served with it at Suvla on the Gallipoli peninsula. When there he contracted dysentery and was invalided to Alexandria, where at one time his recovery was almost despaired of, but ultimately his health was restored and he was sent home. After a few weeks, however, he again rejoined his unit, now serving in the Desert of Sinai, and remained with it until after the battle of Romani, when he was transferred to Egypt to practise his own special branch of medicine in the hospitals in Cairo. His duties included the training of selected officers in diseases of the ear, nose and throat, after which they were posted to hospitals in other places. His work was marked by great thoroughness, and his numerous patients were deeply appreciative of the skill and kindly care he bestowed on them. He continued to serve at this special work until the end of the war, and in the Chapel of the Citadel of Cairo he was married. In the summer of 1919 he resumed his practice again in Aberdeen.

By his death a surgeon has been lost to Scotland who would in time have made for himself a position in the front rank of his profession; but his many friends will most frequently think of him as they so often met him—free and wandering through the country lanes he loved so much, pointing out the features of the bird life of the district, the haunts and habits of which were to him a never-ending source of pleasure and satisfaction. One could not but feel that in addition to his many human friends he had also in his heart a keen love of all bird and animal life, and wished all well. The keen sympathy of all goes out to the members of his family in the loss they have sustained, and to his widow, who is left with her young fatherless son.

H. W.

ANOTHER colleague writes: The medical profession and medical school of Aberdeen have sustained a great loss by the tragic death of Dr. Raymond Vérel, who was held in highest esteem both professionally and personally. Vérel was an Edinburgh graduate of distinction who had hardly settled in Aberdeen when war broke out. No one who knew him was surprised when in the early days of the war he decided for the more strenuous side of field medical service, and a long period of distinguished service in the East brought him well-merited recognition. Returning to Aberdeen last year on demobilization he was early appointed aural surgeon to the Dispensary and Royal Hospital for Sick Children, and was also retained by the City Fever Hospital and Tuberculosis Institute, and lectured on diseases of the ear, nose and throat for the university. He was a man of strong character, quiet, unassuming and genuine. Thoroughly equipped in his special branch of surgery, he was a skilful operator with an excellent technique and sound judgement, and a teacher of no ordinary parts. During the past summer term, in the absence of the senior lecturer in diseases of the ear, nose and throat, he conducted a very large class with great success. As a teacher he was enthusiastic, interesting, lucid, and most conscientious in his preparation for the day's work. His attractive personality was nowhere more evident than in the handling of children, for whom he appeared to possess a special charm. His death has cast a gloom over the profession in these parts, and the deepest sympathy goes out to his widow and child from all who knew him and worked with him.

WE regret to record the death of Dr. THOMAS FAIR JOHNSTON, which took place at Blyth, Northumberland, on August 29th. Dr. Johnston was born at Ormiston, East Lothian, in 1873; he was educated at the Edinburgh High School and the University of Edinburgh, where he graduated M.B., C.M. in 1896, and M.D. in 1904. He had practised at Willington Quay, Silksworth, Cambois, Easington Lane, and Broomhill, all in the north of England, and during the last eight years had enjoyed an extensive practice in Blyth. During 1918 and 1919 he was honorary secretary of the Blyth Division of the British Medical Association. Dr. Johnston was an ardent Freemason, and at the time of his death held high Provincial offices. He had only recently returned from a four months' voyage to the East, undertaken for the purpose of re-establishing his health, which for some time had been impaired. He is survived by a widow and two children.

DR. ROBERT J. COLLIER of Manor Park died on September 22nd. He was educated at Queen's College, Belfast, and took the triple qualification of the Conjoint Board of Scotland in 1891. He joined the late Dr. R. J. Topping of Forest Gate and subsequently succeeded him in practice. He was surgeon to the Post Office and Education Board and an honorary surgeon of the St. John Ambulance Brigade. His great personality and bright outlook on life inspired confidence among a large circle of patients. Dr. Collier, who had been in practice at Manor Park for twenty-five years, was a prominent and active member of the Wanstead Park Golf Club.

Universities and Colleges.

UNIVERSITY OF LONDON.

THE following scheme of intercollegiate advanced work in physiology has been approved for the Honours B.Sc. Examination. Students of the participating colleges are free to attend all the courses:

University College (1st term)—Professor W. M. Bayliss: Physical Chemistry in relation to Physiology.
King's College (2nd term)—Professor W. D. Halliburton and Dr. O. Rosenheim: Advanced Chemical Physiology.
Bedford College (3rd term)—Dr. J. S. Edkins: Advanced Practical Histology.
St. Bartholomew's Hospital (3rd term)—Professor F. A. Bainbridge: Electrical Changes in Skeletal and Cardiac Muscle.
Guy's Hospital (2nd term)—Professor M. S. Pembrey: Practical Work on Respiration.

Additional second examinations for medical degrees, Parts I and II, will begin on December 1st and 7th respectively. Forms of entry, to be obtained from the Academic Registrar by October 18th, must be sent in by Monday, October 25th.

Applications for the university Chair of Chemistry (salary £800 a year) and the university Readership in Pharmacology (salary £400 a year), tenable at Guy's Hospital Medical School, must be received by the Academic Registrar at the university not later than the first post on October 23rd.

KING'S COLLEGE.

Lectures and demonstrations in psychology will be given as follows by Dr. William Brown, Dr. J. A. Hadfield, and Mr. R. J. Bartlett during the session 1920–21:

Day classes (ordinary course): General elementary psychology, Tuesday, 11 to 12 a.m; advanced psychology, Monday, 4 to 5 p.m.; experimental psychology, Friday, 2 to 5 p.m. (lecture 2 to 3, practical work, 3 to 5). *Evening classes* (ordinary course): General elementary psychology, Friday, 5.30 to 6.30 p.m.; advanced psychology, Monday, 6.30 to 7.30 p.m.; conversational, Monday, 5.30 to 6.30 p.m.; experimental psychology, Thursday, 5.30 to 8.30 p.m. (lecture 5.30 to 6.30, practical work, 6.30 to 8.30). *Special courses of lectures:* Advanced practical psychology, at times to be arranged; pathological psychology, ten lectures in the Lent term; mental measurement, ten lectures in the Easter term; tuition course for diploma in psychological medicine, etc., at times to be arranged.

A course of eight lectures on the histology of the nervous system will be given by Dr. C. da Fano, at King's College (Strand, W.C.2) at 4.30 p.m. on Wednesdays, October 13th, 20th, and 27th; November 3rd, 10th, 17th, and 24th; December 1st, 1920. The lectures are addressed to advanced students of the university and to others interested in the subject. Admission is free, without ticket.

GUY'S HOSPITAL MEDICAL SCHOOL.

The following entrance scholarships have been awarded:

Senior Science Scholarship for University Students—War Memorial Scholarship: Nils Lövold Eckhoff (£75). Harold Charles Beccle (£80). George Thompson Henderson (£35). Junior Science Scholarships: Reginald Albert Nash (£120). Alfred Beresford Plant (£50). War Memorial Scholarship (providing a free medical education for five years, annual value about £40): Kenric Charles Billingham. Entrance Scholarship in Arts: Edward Ian Ransford Marsden (£100).

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL.

The Goldsmid Entrance Exhibitions of 112 guineas each have been awarded to F. Hudson and M. Robinson.

UNIVERSITY OF DURHAM.

THE following candidates have been approved at the examination indicated:

THIRD M.B. (*Materia Medica, Pharmacology, and Pharmacy; Public Health; Medical Jurisprudence; Pathology and Elementary Bacteriology*).—F. J. Armstrong, J. C. Boyde, R. A. Brown, R. H. Burnett, Mary Douglass, Anne Fairweather, T. Kirsopp, Mary Manners, R. Manners, G. A. Mason, H. L. Mather, S. J. C. Smith, Phyllis M. Walker, B. P. Wanless.

The Services.

HONOURS.

FOREIGN DECORATIONS.

THE following decorations and medals have been awarded by the Allied Powers for distinguished services rendered during the course of the campaign:

By the President of the French Republic.

Légion d'Honneur—Chevalier: Temporary Captain (temporary Major) Reginald Laidlaw Davies, O.B.E., R.A.M.C. *Médaille des Epidémies en Argent:* Major William Atkin Thompson, R.A.M.C. (T.F.).

By the King of the Hedjaz.

Order of El Nahda (4th Class): Major Dodington G. R. S. Baker, I.M.S., Captain Frederick McKibbin, R.A.M.C.(S.R.).

A CONGRESS of internal medicine will be held at Strasbourg in September, 1921, under the presidency of Dr. L. Bard, when the following subjects will be discussed: (1) Anatomical and functional adaptations of the heart to pathological conditions of the circulation, (2) glycaemia, (3) antianaphylaxis.

Medical News.

Mr. E. B. Turner, F.R.C.S., is leaving London this week for Germany in order to give lectures on venereal disease to the Army of Occupation.

The Drew Lecture before the Hackney College Divinity School will be given by Dr. J. A. Hadfield, at 6.30 p.m. on October 12th, at the Memorial Hall, Farringdon Street.

The National Baby Week Council has removed to 5, Tavistock Square, W.C.1 (Telephone: Museum 6353).

At a meeting of the Society of Medical Officers of Maternity and Child Welfare Centres on Friday, October 15th, at 5.30, at the Royal Society of Medicine, 1, Wimpole Street, W., Dr. Harold Waller will open a discussion upon dental disease in the mother as an adverse factor in infant welfare.

Meetings of the Royal Society of Tropical Medicine and Hygiene will be held during the ensuing session at 11, Chandos Street, Cavendish Square, W.1, at 8.30 p.m. on the third Friday of each month from October to June, with the exception of April.

The Child-Study Society, London, has arranged an interesting programme for the present session. The meetings are held on Thursdays at 6 p.m. at the Royal Sanitary Institute, 90, Buckingham Palace Road, S.W.1. On October 21st Dr. A. R. Abelson will describe "A Psychological Study of the Delinquent Child;" on November 4th there will be a discussion on "Vocational Tests"; on November 18th Dr. F. G. Crookshank will discuss "The Anthropological Study of the Feeble-minded, of Imbeciles, and Apes"; and on December 2nd Dr. William Brown will discuss "The Value of Suggestion in Education."

The general council of King George's Fund for Sailors has made an interim grant of £2,500 towards the capital expenditure for the current year of the King George V Merchant Seamen's Hospital at Malta.

A course of ten lectures on elementary psychotherapy will be given by Dr. H. Crichton Miller at 51, Tavistock Square, W.C., at 5.15 p.m. on Mondays, beginning October 11th.

Dr. S. Rutherford Macphail, who recently resigned the posts of medical superintendent of the Derby Mental Hospital and medical adviser to the Committee for the Care of Mental Defectives, was entertained on September 23rd to dinner at the Midland Hotel by his medical colleagues in Derby. The chair was taken by Sir Richard Luce, and Dr. Macphail's health was proposed by Dr. Sidney Barwise and seconded by Dr. Robert Laurie. Dr. Macphail has also received a presentation of furniture from the committee and staff of the Mental Hospital.

The next congress of the Royal Sanitary Institute will be held at Folkestone towards the end of June, 1921.

Three Chadwick Public Lectures, illustrated by lantern slides, will be given this month by Professor F. F. Roget, of the University of Geneva, on "Health, the Red Cross, and the League of Nations." The lectures will be given at the Surveyors' Institution, 12, Great George Street, Westminster, on Mondays, October 18th and 25th, and Friday, October 29th, at 5 p.m. The third lecture will deal particularly with the programme of the Medical Department of the League of Red Cross Societies.

The following lectures will be given during the present session at the Post-Graduate College, West London Hospital, on Thursdays, at 5 p.m.: October 14th, Dr. W. Langdon Brown, "Principles of internal secretion"; October 21st, Mr. H. Tilley, "Treatment of foreign bodies in the lower air passages and oesophagus, by direct endoscopy"; October 28th, Sir James Galloway, "External manifestations of visceral disease" (at 3.45 p.m.); November 4th, Dr. J. Walter Carr, "Tuberculous meningitis"; November 11th, Dr. E. W. G. Masterman, "Tropical diseases of Palestine"; November 18th, Mr. Swinford Edwards, "Points in rectal surgery"; November 25th, Dr. T. M. Legge, "Anthrax"; December 2nd, Sir J. Dundas Grant, "Functional aphonia and allied disorders"; December 9th, Dr. F. J. Poynton, "The study of heart disease"; December 16th, Lady Barrett, "Puerperal sepsis." These lectures are open without fee to medical practitioners, who will be welcomed.

Dr. H. Scurfield, M.O.H. Sheffield, will open a discussion on "Some Aspects of the Housing Question" at a meeting of the Royal Sanitary Institute to be held at the Mansion House, Doncaster, on October 15th. The chair will be taken at 7.30 p.m. by Professor H. R. Kenwood, C.M.G.

Dr. F. J. Waldo, coroner for the City of London and Southwark, has been elected Master of the Plumbers' Company.

At a meeting of the elected members of council on September 30th Sir Charles Ballance, K.C.M.G., C.B., M.V.O., was unanimously elected President of the Medical Defence Union, in the place of Sir John Tweedy, LL.D., F.R.C.S., resigned.

On the occasion of Dr. G. K. Smiley's departure from Derby to take up a position under the Ministry of Health, his colleagues on the Derby Panel have presented him with several pieces of Crown Derby china as a recognition of his devoted and arduous work as secretary of the Panel Committee. Dr. Smiley was also honorary secretary of the local Division of the British Medical Association, and his departure from Derby is regretted by all his friends.

The following lectures and practical courses of instruction for a diploma of psychological medicine (Part I—2nd course) will be given at the Maudsley Hospital, Denmark Hill, S.E. Sir Frederick Mott will give eight lectures on the anatomy of the nervous system on Tuesdays, at 2.30 p.m., commencing October 12th; Dr. H. Devine will deliver eight lectures on psychology on Thursdays, at 2.30 p.m., commencing October 14th; and Dr. P. L. Golla will give eight lectures on the physiology of the nervous system on Fridays, at 3 p.m., commencing October 22nd. Part II of the second course will follow in January.

A meeting on behalf of the special appeal of the Royal National Orthopaedic Hospital will be held at the Mansion House on Friday, October 15th, at 3 p.m. The Lord Mayor will be in the chair and H.R.H. Prince Henry has promised to speak.

The biennial conference of the British Spa Federation was held on September 30th at Harrogate, when representatives from Bath, Buxton, Cheltenham, Droitwich, Harrogate, Llandrindod Wells, Woodhall, and New Zealand were present. Leamington was admitted to the federation and matters important to the welfare of the British spas were discussed. A presentation was made to Mr. F. J. C. Broome, general manager of Harrogate Spa, in appreciation of his work as honorary secretary of the federation.

The Fifteenth International Congress against Alcoholism will be held, by invitation of the United States Government, in Washington, D.C., from October 21st to 26th. The British correspondent is Mr. J. T. Rae, National Temperance League, Paternoster House, London, E.C.4.

The University of London Press, Ltd., announces for early publication *Mind and Work: The Psychological Factors in Industry and Commerce*, by Dr. C. S. Myers, F.R.S.

Letters, Notes, and Answers.

As, owing to printing difficulties, the Journal *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the Journal be addressed to the Editor at the Office of the Journal.

The postal address of the British Medical Association and British Medical Journal is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the British Medical Journal, *Aitiology, Westrand, London;* telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediocra, Westrand, London;* telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin;* telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

Dr. D. M. Macdonald (Arnside) wishes to know where it is possible to procure small warming pans, or warm water jackets, to be applied to fingers attacked by Raynaud's disease.

Income Tax.

"Dermiensis," to whose previous inquiry a reply was published on September 18th, p. 457, sends further particulars as to the special expenditure incurred by him.

*** The root of the difficulty lies in deciding how far the purchase of the *x*-ray apparatus and the cost of installing it was capital outlay. Our correspondent explains that he had

a "Cox's 10 in. coil and batteries," which was replaced by the more modern apparatus. Probably other articles were displaced and more modern ones substituted when the repairs and alterations were executed. We suggest that "Dermiensis" might ascertain what would have been the cost of purchasing and installing a "Cox's 10 in. coil and batteries," and any other fittings replaced, as at the time when the new *x*-ray apparatus was installed, and that that amount should be allowed by the inspector, the excess being regarded as capital outlay incurred on improvements.

"R. T. S." has bought out his partner, but has not taken over the book debts as a whole. The old partnership was assessed on the basis of the cash receipts of the practice, but these receipts have been swollen by payments being made on account of the departure of the outgoing partner.

*** It is desirable to bear in mind that the basis of cash receipts is admittedly incorrect in theory, but is so convenient in practice that it is adopted by mutual agreement unless there is some cause operating to render it unfair as a reasonable index to the real profits of the practice. From the date of the cessation of the partnership the partner of "R. T. S." ceased to be liable to tax on any future profits, and what he now receives in cash is on account of past profits already assessed. The alternative to bringing into the computation of present profits the whole of the past cash receipts is, as "R. T. S." says, to throw over the cash receipt basis and put the calculation on the footing of the value of the work done by both partners over the past three years—that is, to revert to the correct legal basis. The valuation of the bookings generally raises considerable practical difficulty, and presumably the revenue authorities will hold "R. T. S." to that basis for some years at least. Whether the ultimate net result will be worth while depends, of course, on the degree by which last year's receipts were swollen, and whether the practice profits are likely to increase or not.

Climate in Rheumatoid Arthritis.

Dr. W. J. Midelton (Bournemouth) writes: In reply to "Rheumaticus" (Sept. 25th, p. 497), I would suggest that before sending his patient to Egypt or elsewhere he should give continuous counter-irritation a trial. Quite recently patients have come to me stating they have derived little benefit from spa treatment, vaccines, radiant heat baths, tincture of iodine internally, thyroid medication, etc. Nevertheless they have improved in every way under continuous counter-irritation. They consented readily and found nothing to object to seriously.

LETTERS, NOTES, ETC.

Science Teaching at Cambridge in the Seventies.

A lady missionary in India sends us an interesting letter apropos Dr. F. J. Allen's article in the Journal of May 8th on the "Evolution of the Cambridge Medical School." The article, she says, has revived memories of early, strenuous days.

"I had the great privilege and delight of learning from Professor Humphry, Michael Foster, and (he is not mentioned in the article) Frank Balfour, between October, 1875, and December, 1878. Professor Humphry admitted a few women to his lectures on physiology and anatomy, but *not* to his viva voce examinations—at least, we were only allowed to be present as 'silent tormentors'—his own phrase. Punctually he entered the room, always exquisitely dressed (black coat, pale grey trousers, and tie to match, I seem to remember), trailing his hated gown behind him or hitching it on. He sat down on a high wooden stool placed between two huge blackboards, balanced himself alternately on each leg of the stool, and also balanced a very long pointer on his very thin knee, crossed over the other, and all the while poured forth the most wonderful stream of clear, incisive teaching. He looked so frail and pallid, and yet there was such wonderful vitality. I kept my notes of his lectures for many years; they were so helpful to me as a teacher. Michael Foster allowed us women to sit up in a gallery overlooking his big lecture room, full of men, among whom were not a few greyheads. He did indeed draw on the blackboard in many coloured chalks—then leant his back against it and transferred the colours to his lecture gown! May I add a word about Mr. Frank Balfour? I attended his lectures on embryology one May term, in a tiny room, where men and women were squeezed together (Sir Donald MacAlister sat just behind me—already senior wrangler), and the demonstrator, Mr. Adam Sedgwick, sat on a table dangling his legs, and the lecturer towered above us, in height, as in everything else. I remember specially his long, delicate hands and beautiful manipulation of sections, but also his marvellous and stimulating teaching, not hindered by hesitating speech, and his power of making his pupil feel—oh, *so* small! To this very day the teaching of all three has been an inspiration and a guide. I have never been able to qualify in medicine, but circumstances (especially here in India) have made it needful for me to do a great deal of elementary work among the ignorant sufferers of this country, and I am deeply grateful for the foundations of knowledge so well and truly laid in those Cambridge days of long ago."

Public Health in Egypt in 1918.

In the annual report for 1918 of the Egyptian Public Health Department a history is given of the severe influenza epidemic of that year, during which there were 138,000 deaths; the age group most seriously affected was that from 10 to 20 years. A prophylactic vaccine was prepared, but its use was not recommended. Cases of relapsing fever numbered 12,642; the incidence was slightly increased, but the mortality rate fell to 6.6 per cent., as compared with 9.3 per cent. for the preceding year. There were approximately 25,000 cases of typhus, as against 18,500 in 1917; the mortality rate was 26.4 per cent., compared with 22.4 per cent. in the previous year. There was a marked fall both in the number of cases of plague and in the death rate. Considerable anxiety was felt lest cholera infection should be introduced from Palestine, but as a result of the detention of "suspects" and of the tracing and subsequent observation of passengers, together with the necessary measures of disinfection and control, no case of infection occurred in the interior of the country. Fifteen cases in all were detected, and six terminated lethally. Of 280,000 men who returned, only 8,579 escaped observation; all cases of diarrhoea were detained at the frontier and subjected to bacteriological examination.

Electrical Apparatus.

We have received from Siemens Brothers and Company, Limited, of Caxton House, Westminster, a new catalogue illustrating the dry cells and batteries manufactured by them. These dry cells and batteries have been made in several hundred shapes and sizes, but the fifty or sixty described in these pages should meet ordinary requirements, and among them some are extremely well suited for electro-medical purposes. A section of the catalogue is devoted to the "inert" series of cells and batteries, which contain the exciting agent in a dry and inactive condition until they are required for use, when they are charged with water according to instructions. They may be stored for an indefinite time even in hot climates without deterioration.

Two pamphlets which have just been issued by Watson and Sons (Electro-Medical) Limited, of Sunic House, Parker Street, London, W.C.2, will prove of interest to workers in *x* rays and medical electricity. One of them furnishes detailed estimates of cost for all parts of an *x*-ray equipment and for all installations to suit various conditions of electrical supply and the requirements of hospital or general practice. We note that the cost of an *x*-ray outfit ranges from considerably less than £200 to well over £1,200. The other booklet is a catalogue of diathermy apparatus, and includes a brief explanation of the principle of this method of heat application to the body.

The Secretary of the Department of Scientific and Industrial Research informs us that a licence has been issued by the Board of Trade to the British Electrical and Allied Industries Research Association, which has been approved by the department as complying with the conditions laid down in the Government scheme for the encouragement of industrial research.

We are informed that X-Rays, Limited, of 11, Torrington Place, London, W.C.1, has purchased the *x*-ray and electro-medical business of the High-Tension Company, and that Mr. Mortimer Codd, the author of several works of reference on electrical subjects, will be director of research in the laboratory of the enlarged firm.

Vacancies.

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 44, 45, 48, 49, 50, 51, and 52 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 46, 47, and 48.

The appointment of certifying factory surgeon at Penmachno (Carnarvon) is vacant.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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Six lines and under	0	7	6
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An average line contains six words.

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Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

Note.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.